Northern California's Computer Magazine

September 21, 1994 • #127

FREE

MICROTIMES™

Who Decides What You See And Say?

CENSORSHIP

ON THE NET

EFF Staff Counsel Mike Godwin On Legal (And Other) Issues

Amiga: VideoStage Pro • 3D Studio Plug-Ins

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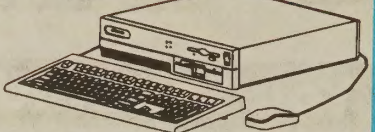

486SX 25MHz
PRESARIO 633 200MB SYSTEM

486SX-33MHz CPU • 200MB Hard Drive 4MB RAM expandable to 32MB • 3.5" Floppy Drive Mouse • Local BUS SVGA • 3 ISA expansion slots • Internal fax/modem
Preinstalled software: MS DOS • MS Windows 3.1 • PFS: WindowWorks 2.0 Delrina WinFax Lite • Prodigy • America On-Line • Symantec Games Pack
Monitor Not Included
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CONTURA AERO

486SL 25MHz
CONTURA AERO 4/25
84MB SUPER LIGHT NOTEBOOK

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MS-DOS 6 • Microsoft Windows
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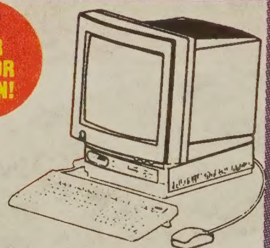

486SX-33MHz
PRESARIO 433-200
200MB SYSTEM

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4MB RAM expandable to 20MB • 3.5" 1.44 Floppy Drive
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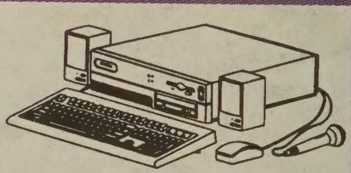

486SX-33MHz
PRESARIO 633 CDS
200MB MULTIMEDIA SYSTEM

486SX-33MHz CPU • 200MB Hard Drive • 4MB RAM expandable to 32MB 3.5" 1.44MB Floppy Drive • CD-ROM drive (dual-Speed) • Mouse • Sound Blaster 16 Audio Board External speakers and microphone • Local BUS VGA • 2 ISA expansion slots Internal Fax/Modem
Preinstalled software: MS DOS
MS Windows 3.1 • TabWorks
Microsoft Works • Prodigy
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Delrina WinFax Lite
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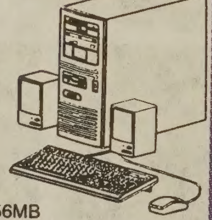

486SX-33MHz
PRESARIO 833 CDS
270MB MULTIMEDIA SYSTEM

486SX-33MHz CPU • 270MB Hard Drive • 4MB RAM expandable to 56MB Dual Floppy Drive CD ROM drive (Dual-Speed) • SoundBlaster 16 Audio Board • Mouse External speakers and microphone Local BUS VGA • 4 ISA expansion slots Internal Fax/Modem • Supports Intel OverDrive processor(486DX2/66), as well as future OverDrive processor with Pentium technology • Preinstalled software: MS DOS TabWorks • MS Windows 3.1 • Microsoft Works • Delrina WinFax Lite
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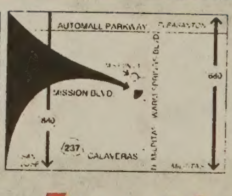

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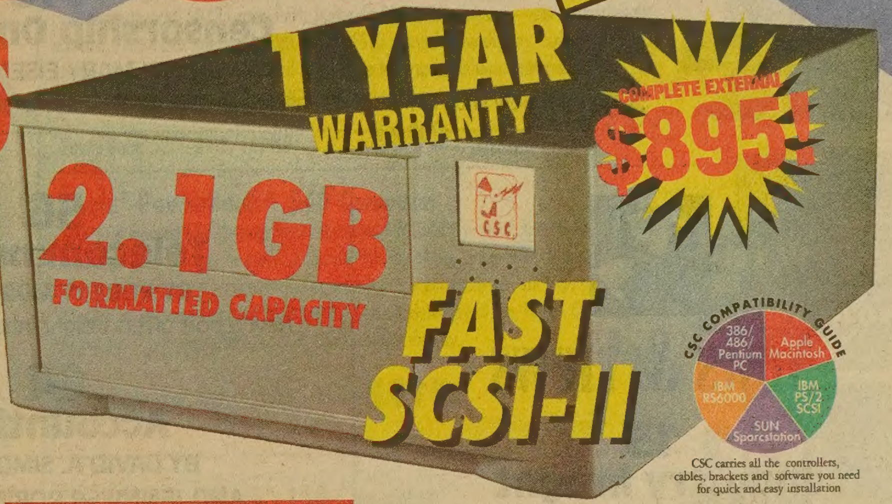
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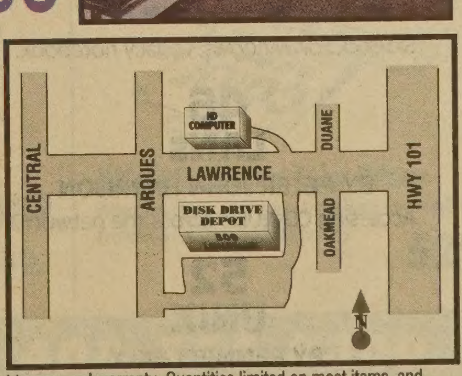
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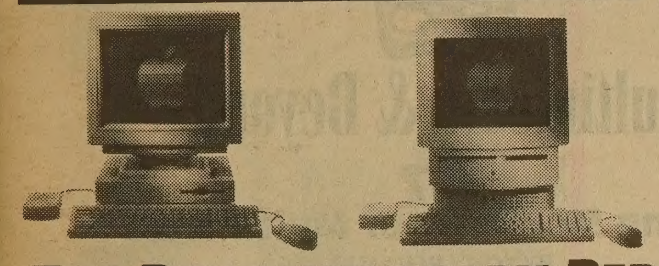

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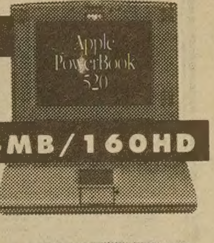

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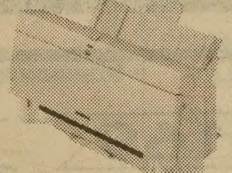

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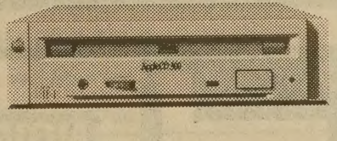

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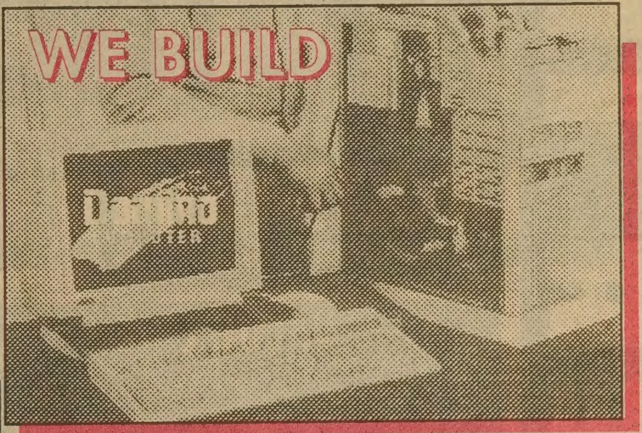

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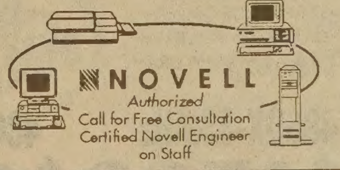

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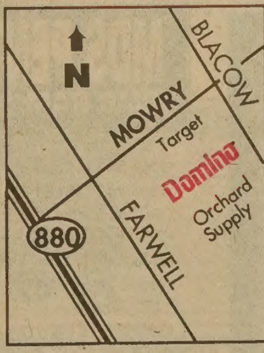

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- 14" Color SVGA Monitor (1024x768)
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- 101 Enhanced Soft/Click Keyboard
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- Intel 486DX/DX2 Processor
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- 3 VLB & 7 16 Bit ISA Slots
- 4MB RAM (72-Pins SIMM-70ns)
- Teac 1.2MB (5-1/4") & 1.44MB (3-1/2") Floppies
- 340MB IDE Hard Drive
- 32-Bit VLB IDE Controller
- 14" Non-Interlaced SVGA Monitor (1024x768, .28mm)
- Middle Tower Case w/250 Watt Power Supply
- 2 Serial, 1 Parallel & 1 Game Ports
- 101 Enhanced Soft/Click Keyboard
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MDS 486 VLB WIN STATION
(8MB RAM/420MB Hard Disk/256/15")

- Intel 486DX/DX2 Processor
- 486DX 256K VLB M/B w/Pentium Zif Socket
- 3 VLB & 7 16 Bit ISA Slots
- 8MB RAM (72-Pins SIMM-70ns)
- Teac 1.2MB (5-1/4") & 1.44MB (3-1/2") Floppies
- 420MB IDE Hard Drive
- 32-Bit VLB IDE Controller
- Orchid Kelvin 64 VLB Win Accelerator w/1MB DRAM
- 15" Non-Interlaced Flatscreen Monitor (.28mm)
- Middle Tower Case w/250 Watt Power Supply
- 2 Serial, 1 Parallel & 1 Game Ports
- 101 Enhanced Soft/Click Keyboard
- MDS Serial Mouse w/Mouse Pad
- MS DOS 6.2 & Windows 3:11

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- 8MB RAM (72-Pins SIMM-70ns)
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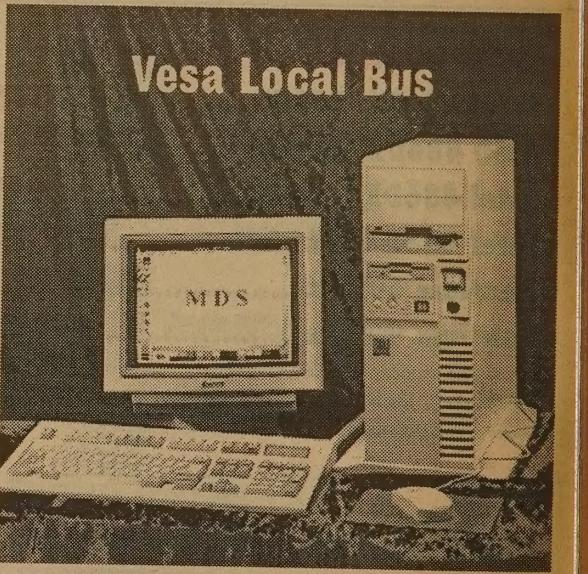

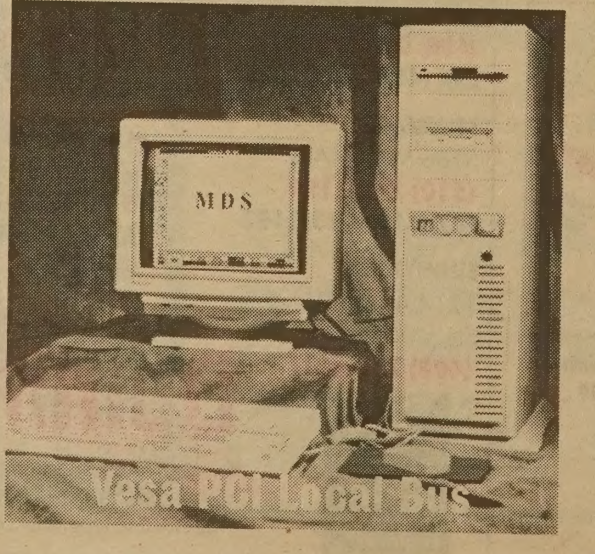

MDS PENTIUM 60/66 PCI/VLB
(8MB RAM/540MB Hard Disk/256/14")

- Intel Pentium P5 Processor
- Heat Sink and cooling Fan
- Pentium PCI/VLB Motherboard w/256K Cache
- 2 VL, 5 ISA & 4 PCI Bus Slots
- 8MB RAM (72-Pins SIMM-70ns)
- Teac 1.2MB (5-1/4") & 1.44MB (3-1/2") Floppies
- 540MB SCSI Hard Drive
- NCR PCI SCSI Controller Card
- Orchid Kelvin 64 PCI Win Accelerator w/1MB DRAM
- 14" Non-Interlaced SVGA Monitor (1024x768, .28mm)
- Middle Tower Case w/250 Watt Power Supply
- 2 Serial, 1 Parallel & 1 Game Ports
- 101 Enhanced Soft/Click Keyboard
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PENTIUM 60MHz $2169
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MDS PENTIUM 90 PCI/VLB
(8MB RAM/540MB Hard Disk/256/14")

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- Pentium PCI/VLB Motherboard w/256K Cache
- 2 VL, 5 ISA & 4 PCI Bus Slots
- 8MB RAM (72-Pins SIMM-70ns)
- Teac 1.2MB (5-1/4") & 1.44MB (3-1/2") Floppies
- 540MB SCSI Hard Drive
- NCR PCI SCSI Controller Card
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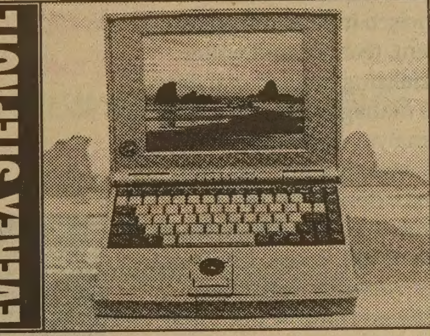

STANDARD CONFIGURATION:

- **CPU:** Intel SL-Enhanced DX2-50/DX4-75MHz
- **MEMORY:** 4MB (8MB, 16MB, 20MB, 36MB Optional)
- **VIDEO:** VL-Bus Win Accelerator w/1MN VRAM
- **DISPLAY:** 9.5" Upgradable 64GS, DSTN or TFT Color
- **HARD DRIVE:** Detachable 2.5" Hard Drive
- **FLOPPY:** Detachable 1.44MB Slim Floppy
- **KEYBOARD:** Removable 86 Key Keyboard
- **TRACKBALL:** Removable 20mm Trackball
- **PCMCIA:** Two Type II & One Type III
- **AUDIO:** Sound Blaster Compatible Audio System
- **PORTS:** Serial, Parallel, PS/2 Mouse, Keyboard, EXT VGA, MIC, Line-In & Out & Docking Ports
- **BATTERY:** Primary Ni-MH Battery (Secondary Option)
- **ADAPTER:** 90V-265V AC/DC Adapter
- **CASE:** Multi-Purpose Carrying Case
- **WEIGHT:** 5.3lbs to 6.1lbs w/Battery

	486DX2-50MHz 4MB RAM/250MB HD	486DX4-75MHz 4MB RAM/340MB HD
64GS MONO	$1795	$2315
Dual Scan Color	$2189	$2745
Active Matrix Color	$3495	$3695

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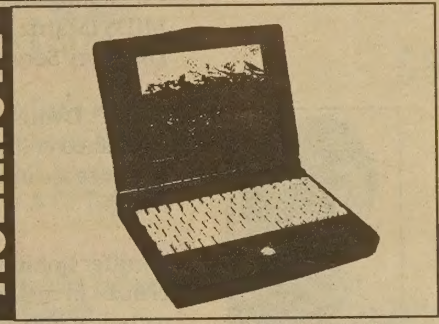

STANDARD Acer CONFIGURATION:

Intel DX2-50/DX4-75MHz low-power processor
9.5" TFT or DSTN 256-color VGA LCD display
Two PCMCIA Type II Slots or one Type III Slot
VESA local Bus Windows accelerated video with 512Kb RAM
Supports simultaneous VGA display on monitor and LCD
8MB RAM, Upgradable to 12 or 16MB; 128KB Flash BIOS
1.44MB Floppy disk drive and removable hard disk drive
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Dimensions: 11.4" x 2.1" x 8.6" (TFT); 11.4" x 2.0" x 8.6" (DSTN)
Weight: 6.4lbs (TFT); 6.2lbs (DSTN)
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MDS MODEL 9200

STANDARD CONFIGURATION:

- **CPU:** Intel SL-Enhanced DX-33/DX2-50/DX4-75MHz
- **MEMORY:** 4MB (8MB, 16MB, 20MB, 36MB Optional)
- **BIOS:** Award BIOS w/128K Flash ROM
- **VIDEO:** VL-Bus Win Accelerator w/1MN VRAM
- **DISPLAY:** 9.5" 64GS, DSTN or TFT Color
- **HARD DRIVE:** 250MB Hard Drive (340MB, 520MB Optional)
- **FLOPPY:** Built-In 1.44MB Floppy
- **KEYBOARD:** Built-In 86 Key Keyboard
- **TRACKBALL:** Built-In 25mm Trackball
- **PCMCIA:** One Type IV Slot (Two Type II/One Type III + One Type II)
- **AUDIO:** Sound Blaster Compatible Audio System
- **PORTS:** Serial, Parallel, PS/2 Mouse, Keyboard, EXT VGA, MIC, Line-In & Out & Docking Ports
- **BATTERY:** Ni-MH Battery
- **ADAPTER:** 90V-265V AC/DC Adapter; 2 Hours Quick Charger
- **CASE:** Multi-Purpose Nylon Carrying Case
- **WEIGHT:** 6.6lbs w/Battery

	486DX-33MHZ 4MB RAM/250MB HD	486DX2-66MHZ 4MB RAM/250MB HD	486DX4-100MHZ 4MB RAM/250MB HD
64GS MONO	$1765	$1795	$2198
Dual Scan Color	$2189	$2280	$2635
Active Matrix Color	$3165	$3198	$3595

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Smoot Carl-Mitchell (smoot@tic.com) Austin, TX-based writer and consultant, is the managing partner of TIC (Texas Internet Consulting) and president of MIDS (Matrix Information Directory Services).

John C. Dvorak is a much-published columnist who meets some interesting characters.

Jennifer Robin Cherniss specializes in making boring technical information less so. You can reach her at (510)893-5753.

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Fabian Pascal is a San Francisco independent consultant, teacher, and writer specializing in relational database management. An industry analyst, he teaches seminars, consults, and has published extensively. He is author of *SQL and Relational Basics* (M&T Books, 1990) and *Understanding Relational Databases* (John Wiley, 1993). He can be reached on MCI Mail (FPascal), CompuServe (73677,3306), or at (415) 776-5184.

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- 2 Serial, 1 Parallel,& 1 Game Port
- 32 Bit VLB Window Accelerator w/1MB
- 14" 1024x768 SVGA Monitor 0.28 NI
- Mini Tower Case w/230W P/S
- 101 Key Enhanced Keyboard
- Hi-Res Mouse
- MS DOS 6.22 & Windows 3.11 w/Manual

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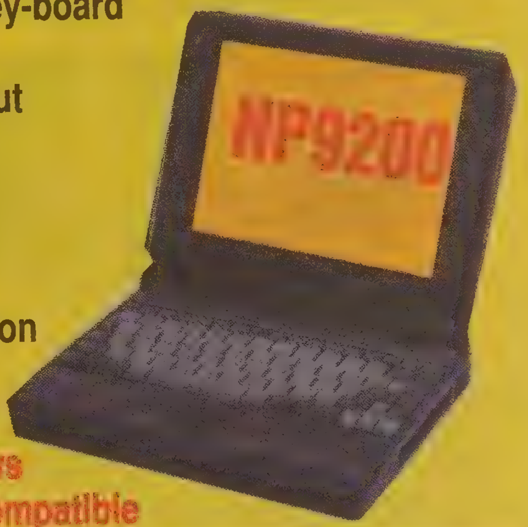
- Sound Blaster & Microsoft Windows Sound System Compatible



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BY PAUL HOFFMAN

Industry Insight

Rating The Ratings: Game Companies Form Dueling Standards

Hey, why make it easy on consumers? In response to increasing pressure from parents' groups and Congress, video game and computer game software manufacturers have formed ratings systems to inform consumers what is in the games that they are buying. However, the two groups have formed very different types of ratings organizations to serve their own needs.

For many years, a few parents have complained about the amount of sex and violence in the cartridge video games (primarily for the Nintendo and Sega systems) that their children bought or rented. There was no easy way to determine if a game was an "action" game with lots of simulated running and jumping or a violent game with lots of shooting and stabbing. The level of complaints rose significantly last year with the release of Mortal Kombat, which allows the player who has won to vanquish his or her (probably his) opponent in a particularly gruesome fashion.

Late last year, Congress started to hold hearings on the matter. A few more popular and violent games were released, and the furor continued. Hardware and software manufacturers of cartridge and CD-ROM system games decided to quell the furor by forming the Interactive Digital Software Association, which will soon start applying ratings to game software. These ratings give a rating for the appropriate ages for the games (three and up, six and up, thirteen and up, seventeen and up, and adults only). They will also give short reasons for the rating (violence, sex, "language," and other).

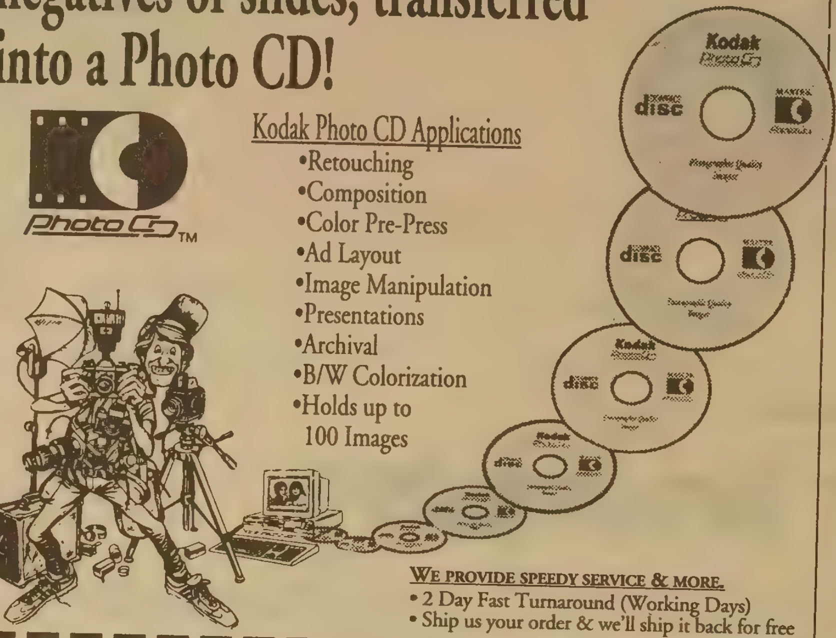
Two senators, Herb Kohl of Wisconsin and Joseph Lieberman of Connecticut, supported both the initial hearings and the IDSA. In fact, the senators sent a letter to major retailers strongly urging them to sell only games with the ratings. At this point, computer software manufacturers started to get quite worried, for a few reasons. The IDSA was set up for video games, which is a very different (and much larger) market than PC and Macintosh games, and the way the ratings process goes is much different from what the computer game software manufacturers want.

> **THE LEVEL OF COMPLAINTS** rose significantly last year with the release of **MORTAL KOMBAT,** which allows the player who has won to vanquish his or her (probably his) opponent in a particularly gruesome fashion.

Thus, the computer game manufacturers pulled together a half-dozen of their respective organizations, formed the Recreational Software Advisory Council, and devised their own rating system. The ratings from the RSAC differ from those from the IDSA in a few ways. Instead of a single age rating, they give values for how much violence, sex, and "language" is used in the game on a scale from 1 to 4. It is then up to the consumer to decide if they want to buy a game, say, with a 4 for violence and 2 for sex.

The ratings method goes deeper than the difference in styles. The IDSA has outside people perform its ratings based on storyboards given by the manufacturers. The RSAC, on the other hand, relies on the game manufacturer to answer a set of yes-no questions that are used to determine the 1-to-4 scale. Because of its use of others to do the rating, the IDSA charges $500 and can take up to a month to rate the software; the RSAC does not charge and validates the software's checklist in about a week. Both groups defend their methods as appropriate for their manufacturing markets, and both generally have criticisms of each other's methods.

Although Kohl and Lieberman have written Senate bills concerning ratings, they are not pushing them very hard in hopes that the industries take care of the situation themselves. They clearly support the IDSA model of outside raters, but may support the RSAC ratings as well if it is clear that game manufacturers do not cheat in order to get lower ratings (something that could also happen under the IDSA). Parents' groups



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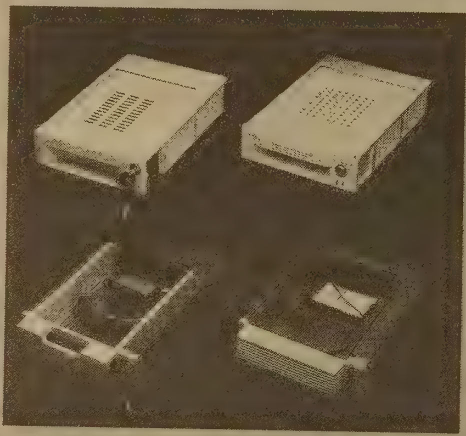

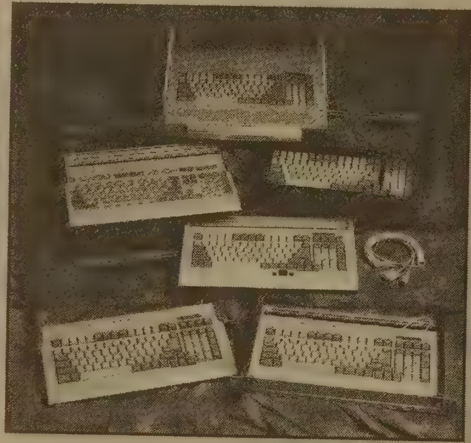

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will also be watching how the ratings go, and both boards have members from parents' and educational groups. It is likely that there will be a major review after the Christmas buying season to evaluate how well everything went and whether changes need to be made in either or both systems.

PC Graphics Board Manufacturers Set Up Consortium To Prevent Ratings Cheating

About a year ago, PC graphics accelerator boards became an almost undifferentiable commodity. They all had the same features (many resolutions and numbers of colors available), and they all sped up graphics rendering. The only way to tell if one was worth $100 or $200 more than another was to look at its speed rating.

Unfortunately, the manufacturers started playing games with the ratings so that their boards looked faster than they really were. There are many ratings systems, each usually sponsored by a magazine, that were supposed to measure the boards in "real world" use, but the manufacturers learned how to tweak the accelerator chips and the drivers for the boards to perform well on those tests. Pretty soon, the ratings became meaningless.

That situation is about to change. Most of the chip makers and board manufacturers have agreed to form a group called the Clean PC whose mission is to make the graphics ratings rational and difficult to fudge. The Clean PC's charter calls it a self-policing industry association, and companies that cheat on their ratings will be publicly flayed. The group will not propose any new benchmark, but simply use many of the benchmarks that are already popular and look for anomalies or questionable results.

By using existing rating systems, the group sidestepped the possible wrath of many popular magazines that had invested a great deal of time and money promoting their ratings system. In addition, it made the Clean PC's job of spotting anomalies easier: if a board has average performance on three tests and in unscientific "real life" runs, but incredibly good performance on a fourth test, the manufacturer may have some explaining to do. The results of the testing, including a list of any boards that are questionable, will be published regularly.

The results should be available to consumers by early winter, in time for COMDEX. This gives manufacturers time to clean up their graphics driver code to eliminate some of the questionable cheats they put in. Since most popular board manufacturers use chips produced by just a few companies, it is likely that most boards will fall into a few tight bands of performance numbers.

An interesting aspect of the Clean PC will make consumers even happier. Because it is a voluntary organization, not every board maker has to join. However, Company A can pay to have Company B's board tested for compliance even if Company B is not a member. This way, a company won't have an advantage by not joining Clean PC. Given that the magazines sponsoring the benchmarks will see lists of questionable boards, it will almost certainly force all graphics board companies, not just Clean PC members, to clean up their acts.

Hopefully, the need for Clean PC goes away within six months, and the group only exists to prevent companies from

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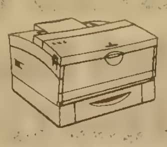

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starting to cheat again. After one or two companies get caught and are exposed, it is unlikely that many others will do so. A few years ago, the Norton SI rating was considered very important for PC sellers; now, only a few use the rating since it became widely known how to cheat to get higher ratings. The Clean PC initiative may make the same kind of change for graphics board manufacturers.

New Types Of RAM Starting To Make Headway

To most PC and Macintosh users, there is only one type of RAM: the DRAM (dynamic RAM) used as the main memory for programs. More advanced users know that their systems usually contain a second type of RAM: video RAM or static RAM, which is faster than DRAM but more expensive. It is used to make graphics faster on systems.

The design of DRAM has not changed much in fifteen years. In the past few years, however, a few companies have introduced new designs for RAM that are much faster than DRAM but cost only a little more. These designs have generally not been adopted, however, due to inertia on the part of PC motherboard designers who do not want to use the new interfaces.

Of the new designs, the one that has garnered the most press in the chip industry is the Rambus RDRAM design from Rambus, Inc. Recently, Rambus got a big boost when Nintendo designated it as the RAM to be used in its forthcoming 64-bit video game system called Ultra-64. Although still more than a year off, the announcement will help Rambus since Nintendo will probably order millions of the chips for the system.

Rambus and its competitors have also been making slow inroads with graphics cards makers who want fast video boards at lower cost. That market, which is huge, now has a new competitor, MoSys, which designed its new RAM specifically for real-world graphics applications. Although its specification is not final, MoSys has already gotten commitments from the major graphics chip companies to support its new system.

The advent of a faster RAM that is only slightly more expensive than DRAM could make a big difference in the PC market in the next few years. Today, even fast PCs still cannot show good video due to slow displays, and faster RAM could make a big enough difference to make video acceptable on PCs. Even in main memory, faster RAM could make a difference for memory-intensive operations that involve lots of data, such as searching a database. Now that the bus wars are a bit more settled, the next frontier for competition in high-end PC makers might be the kind of RAM they use.■

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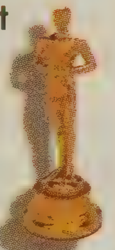

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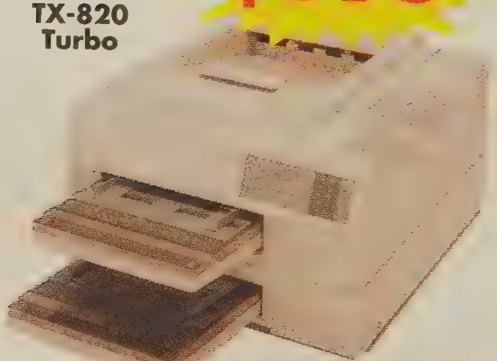

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Industry Insights *continued...*

Riding the coattails of last month's euphoric rally, the MicroTimes Stock Index notched an impressive 493-point, 10.8% gain during the monthly trading period ended August 19.

In sharp contrast, the Dow Jones Industrial Average etched out a nominal 20.07-point, .54% gain en route to a close of 3755.11.

➛ IBM gained $6.75 a share last month to a new 12-month high of $68.13. Merrill Lynch raised its third-quarter and fourth-quarter earnings estimates for the company; S.G. Warburg upped its 12-month price range for the stock to between $80 and $85 a share; S&P reiterated its "accumulate" rating on IBM last week.

➛ Shares of Apple Computer were in high demand last month after the #2 US personal computer maker said fiscal third-quarter profit from operations rose to $59.9 million, or 50 cents a share, from $10.6 million, or 9 cents a share, in the year-ago quarter. Revenue for the three-month period rose 15% to $2.15 billion. Apple's CEO attributed the rise to an improved financial model, controlled costs and good management of working capital. Following the positive earnings release, Apple Computer, which closed out the month at $34.88 (up 13%), was raised to "hold" from "avoid" at Bear Stearns, and raised to "neutral" from "unattractive" at PaineWebber. Both brokerage firms raised their respective earnings estimates for Apple for 1994 and 1995. Another significant development at Apple since our last stock report: the company's Power Macintosh was ranked superior to Pentium computers according to a study conducted by Ingram Laboratories.

➛ Compaq was also popular with shareholders during the last four weeks, as its share price gained $5.88, or 19.1%, to close at $36.63. The stock benefited from Compaq's assurances to Wall Street that its products are still in strong demand and that it has cleared up its alleged excess inventory. Moreover, Compaq officials said they believe third-quarter sales could eclipse second quarter's revenues of $2.49 billion.

➛ Even Digital Equipment got into the act, as its stock price appreciated $3.13, or 16.1%, to $22.50. As expected, the embattled company posted a large fiscal fourth-quarter loss from operations of $160.4 million vis-a-vis a profit of $113.2 million in the comparable year-ago period. Unexpectedly, however, DEC's share price rallied on the news, as investors seemed relieved that the results weren't even worse. For the quarter, the company posted a net loss of $1.75 billion, following a $1.2 billion charge to terminate another 20,000 jobs.

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	SOFTWARE											
OTC	Adobe		ADBE	31.19	32.25	1.06	3.41	26	0.20	0.62	34.50	16.25
OTC	Aldus		ALDC	30.38	32.00	1.63	5.35	28	0.00	0.00	34.50	16.25
OTC	Autodesk		ACAD	52.00	58.25	6.25	12.02	23	0.48	0.82	61.75	37.00
OTC	Borland		BORL	10.50	14.13	3.63	34.52	-	0.00	0.00	20.75	8.50
OTC	Informix		IFMX	20.13	20.88	0.75	3.73	24	0.00	0.00	24.50	14.25
OTC	Lotus		LOTS	31.25	41.81	10.56	33.80	25	0.00	0.00	86.50	29.75
OTC	Microsoft		MSFT	50.56	54.88	4.31	8.53	29	0.00	0.00	56.38	35.63
OTC	Novell		NOVL	16.13	15.13	-1.00	-6.20	-	0.00	0.00	26.63	14.00
OTC	Oracle	(H)	ORCL	36.75	40.50	3.75	10.20	42	0.00	0.00	41.00	22.88
OTC	Software Publishing		SPCO	3.88	4.00	0.13	3.23	-	0.00	0.00	8.63	3.00
OTC	Symantec		SYMC	12.25	13.00	0.75	6.12	-	0.00	0.00	20.50	9.88
	HARDWARE											
OTC	Apple		AAPL	31.00	34.88	3.88	12.50	21	0.48	1.38	38.50	22.00
OTC	AST Research		ASTA	14.50	17.00	2.50	17.24	10	0.00	0.00	33.00	12.50
NYS	Compaq		CPQ	30.75	36.63	5.88	19.11	14	0.00	0.00	39.88	17.28
NYS	Digital Equipment		DEC	19.38	22.50	3.13	16.13	-	0.00	0.00	43.13	18.25
OTC	Dell	(H)	DELL	26.00	34.13	8.13	31.25	-	0.00	0.00	36.25	15.13
NYS	Hewlett-Packard		HWP	75.25	87.88	12.63	16.78	16	1.20	1.37	93.63	64.38
NYS	IBM	(H)	IBM	61.38	68.13	6.75	11.00	30	1.00	1.47	68.13	41.25
NYS	Silicon Graphics		SGI	21.50	25.13	3.63	16.86	27	0.00	0.00	26.88	18.00
OTC	Sun Microsystems		SUNW	22.13	25.50	3.38	15.25	13	0.00	0.00	31.38	18.25
NYS	Xerox	(H)	XRX	101.00	107.13	6.13	6.06	-	3.00	2.80	107.38	69.88
NYS	Tandy		TAN	36.50	39.63	3.13	8.56	16	0.60	1.51	50.75	29.13
	CPU'S											
NYS	Advanced Micro Devices		AMD	25.88	28.75	2.88	11.11	10	0.00	0.00	32.50	16.75
OTC	Intel		INTC	57.88	63.44	5.56	9.61	11	0.24	0.38	74.50	55.88
NYS	LSI Logic	(H)	LSI	27.00	30.25	3.25	12.04	21	0.00	0.00	30.50	13.00
NYS	Motorola		MOT	49.50	52.63	3.13	6.31	24	0.28	0.53	54.88	42.13
	COMMUNICATIONS											
NYS	AT&T		T	54.25	53.13	-1.13	-2.07	17	1.32	2.48	63.38	49.50
NYS	BellSouth Corp.		BLS	60.38	60.88	0.50	0.83	23	2.76	4.53	63.88	53.00
OTC	MCI		MCIC	23.81	22.75	-1.06	-4.46	19	0.05	0.22	29.63	21.38
NYS	Northern Telecom	(H)	NT	30.75	34.75	4.00	13.01	44	0.36	1.04	35.13	23.75
NYS	Pacific Telesis		PAC	31.25	31.88	0.63	2.00	28	2.18	6.84	34.50	29.41

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES....................	28
DECLINES.....................	3
UNCHANGED................	0
NEW HIGHS..................	6
NEW LOWS...................	0

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER....................	Hewlett-Packard................	$	12.63
LARGEST DOLLAR LOSER......................	AT&T................................	$	-1.13
LARGEST PERCENTAGE GAINER...........	Borland................................		34.52 %
LARGEST PERCENTAGE LOSER............	Novell................................		-6.20 %

	CLOSE 07/22/94	CLOSE 08/19/94	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD
MICROTIMES STOCK INDEX	4577.29	5070.19	492.90	10.77
DOW JONES INDUSTRIAL AVERAGE	3735.04	3755.11	20.07	0.54
STANDARD & POOR'S 500 INDEX	453.11	463.68	10.57	2.33
N.Y.S.E. COMPOSITE	250.24	255.81	5.57	2.23
NASDAQ COMPOSITE	716.68	742.43	25.75	3.59

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
02/04/94	4728.74	3871.42
03/04/94	5081.75	3832.30
04/05/94	4878.26	3675.41
04/29/94	4639.86	3668.31
05/27/94	4709.29	3757.14
06/24/94	4238.94	3636.94
07/22/94	4577.29	3735.04
08/19/94	5070.19	3755.11

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REALIZABLE FANTASIES • BY JIM WARREN

Shocking Political Communications

Government is leaping onto the "information superhighways," but sometimes it seems more like naive children playing on a freeway.

Politicians' Arrogance

What do you think of your local, state and federal elected "representatives" who have tax-funded phones in their offices, which they often use to contact the media for self-promotion, which numerous special-interest lobbyists readily use, which they eagerly disclose to anyone who might give them money—certainly including vote-buyers from outside of their districts—but which they refuse to disclose to the "mere peons"—the citizens and voters whom they are supposed to be serving? I'm not talking about their private direct phone numbers; I'm talking about the phones that their staff uses all the time.

Well, that's exactly how some deadbeat incumbents deal with their fax numbers that are paid for with our tax dollars. Fortunately, this horse-'n'-buggy view that their fax numbers should only be for their use is slowly dying, especially as these arrogant incumbents are replaced by modern-minded and responsive representatives—but this arrogance is still far too widespread, especially given (1) the proliferation of fax-modems in millions of voters' personal computers, and (2) the speed with which legislation changes and hearings are scheduled.

Snail-mail (paper mail delivered by the US Postal Service) is too slow to permit any real citizen-participation in much of the process of our own governance—faxes, telegrams and hyper-expensive FedEx-type delivery are often the only options for useful written input.

Look in the phone book under "Government" and see if your local, state and federal elected representatives have listed their fax numbers, along with their quaint, old-fashioned voice-phone numbers. If they haven't, call and ask for it.

Politicians who won't give you their fax numbers obviously don't wish to represent you.

Politicians' Email

And since you're calling them, ask for their electronic-mail address.

The President and Vice President have had email addresses for more than a year—and their computer will send a form response in seconds, pending later human review by a staffer, just as happens with other written communications that arrive on pre-landfill media.

By year's end, most members of Congress should have email addresses, similarly processed by an auto-responder and, hopefully, by later staff review. And state legislators are starting to have public email addresses, overseen by staff. Perhaps someday, even California's Governor will permit incoming email communications—even after election season.

And more and more local agencies and elected officials are permitting similarly-modern citizen communications.

POLITICIANS WHO WON'T GIVE YOU THEIR FAX NUMBERS OBVIOUSLY DON'T WISH TO REPRESENT YOU.

Ask politicians who want your vote to get email addresses, and include them, along with their fax numbers, on their business cards, stationery and in their phone book listings.

Political Email Images

It's sometimes said that, in Hollywood, "you are what you wear." And it's well-known that such preoccupation with appearance permeates politics. But such trite value judgements are even inflicted on citizens' communications to politicians—and now impact the value of citizens' email to their legislators and other elected representatives.

As we all bumble into modern (online) communications, a curious aberration is appearing: Email from citizens to politicians—including emailed messages that are faxed via an email fax-server*—supporting or opposing a given piece of legislation, is seen as being less significant than identical text in paper letters or faxes that appear to be copies of paper letters (those few that arrive not too soon and not too late, but nonetheless manage to remain pertinent to the legislation in its current, rapidly-amended form).

Here's the usual scenario: Senator Gladhand introduces a bill. Advocates send messages of support to Sen. Gladhand, who gleefully copies them to the members of each successive committee that will consider the bill—to show its broad public support and help committee members waver in its favor. (Sen. Gladhand may or may not circulate letters of opposition with equal enthusiasm.)

New Information-Technology Governor's Council

Governor Pete Wilson signed an executive order [W-93-94] in July, creating the Governor's Council on Information Technology, to develop "a blueprint by which state and local jurisdictions can use information and telecommunication technology to reinvent government, including:

- Steps to improve academic performance;
- Ways to prepare our workforce for new occupations brought about by the information revolution;
- How to simulate success from the private sector in using techology to reduce costs and improve service in the public sector;
- How to streamline government regulatory processes;
- How to provide government services more conveniently, effectively and efficiently;
- How to make information readily, inexpensively, and broadly accessible."

The Order further stated that, "Members of the Information Technology Council will be appointed by the Governor."

Let's Include a Citizens' Advocate

We hope that the Governor's Council will include on his Council at least one technically-knowledgeable, ardent citizen advocate of computer-aided public access to government.

Of course, we can think of no better person to do that than our own futures columnist, Jim Warren, who has already received national recognition for his work in that area.

Agree or disagree, you might quickly suggest your nominee(s) to:

Governor Pete Wilson
State Capitol
Sacramento, CA 95814
fax/916-565-1994

Re: Governor's Council on Information Technology
—eds.

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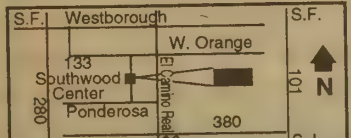

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Fantasies *continued*

But such support messages traditionally have different value, depending on their format: Petitions are the least significant. Form postcards and form letters also count for very little, but are better than nothing. Individualized letters—in paper or faxed form—count much more. Individualized messages from organizations count the most, by far.

Now, email is entering this mix. And even messages that are cogent, articulate and individualized, when sent by email and printed out and copied to committee-member targets, are apparently often being evaluated as having little-more value than form letters. "Well, they just all look alike!"

Sad and appallingly infuriating, but true–if you want your messages to legislators to carry the most weight, you better make them look like "real" letters.

*There are an increasing number of email servers to which one can send an email message that includes a fixed-format fax phone number, which will cause the server to then actually convert the email message to a fax and transmit it to the (usually local) fax number. Unfortunately for political faxes, such email-originated faxes look "too much" like email to be "counted" as much as faxes that look like copies of "real" letters.

Death to Voter Info

You may recall that California Senate Bill 758 (Hayden, D-Hollywood) would have required that candidates and campaigns who receive significant loot—uh, contributions—must file their already-required campaign-finance disclosures in computerized form, and would have required the Secretary of State to make the information available without charge via the public computer nets (i.e., via the Internet). (This would implement a 28-page generic plan that I proposed in early January, promptly and strongly supported by acting Secretary of State Tony Miller. Copy available from me, upon request.)

Tom Hayden and his chief aide contacted me and said they wanted to carry the legislation. They took it on... and then spent most of the spring on his campaign for the Democratic gubernatorial nomination.

Eventually, the bill came before Diane Martinez's (D-East LA) Assembly Committee on Elections. Martinez, still in a snit because Hayden hadn't supported some pet bill of hers in the Senate, refused to support SB 758, and refused to allow its reconsideration after the June primaries (when Hayden could again pursue his senatorial responsibilities, full-time).

And poor, powerless Assembly Speaker Willie Brown (D-San Francisco) was entirely unable to get Ms. Martinez to change her mind—even though Secretary of State Tony Miller diligently pleaded for his assistance. Note: Brown appointed Martinez to chair this committee, which controls all political-reform legislation.

So, Californians can continue to remain functionally in the dark about who's paying how much to whom—except, of course, those who have the time to slog through the mountains of paper disclosures that fill Sacramento file cabinets.

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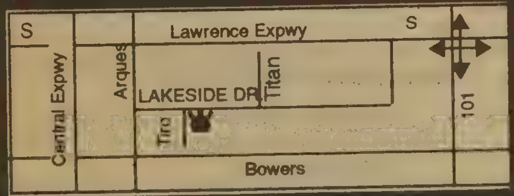

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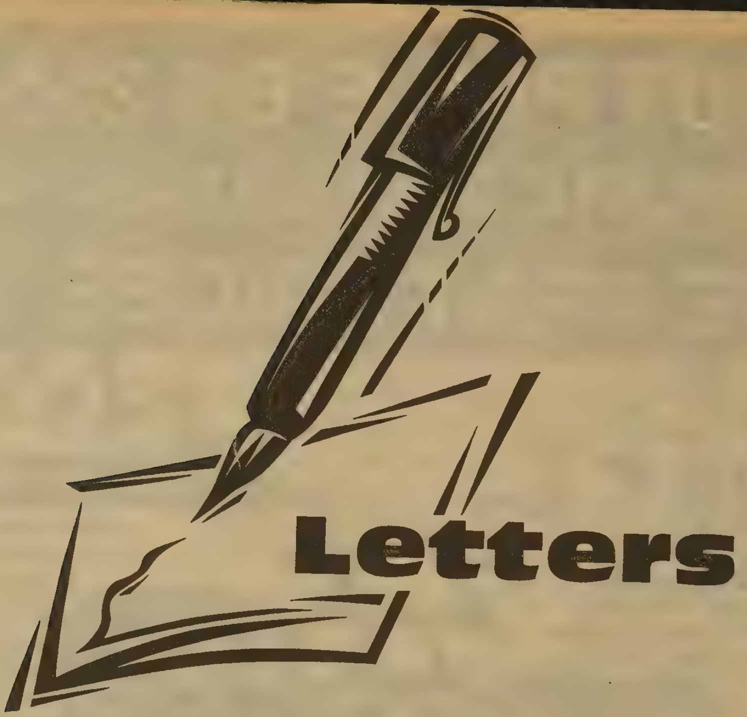

Letters

IBM and Health Care Reform: Another View

IBM recently announced its opposition to President Clinton's Health Care Reform plans. In response, Computer Tyme is announcing its support for the Clinton plan, that it's time to do something real with Health Care and something that actually works.

Large companies like IBM have enjoyed the advantage of being able to negotiate health care rates that are 40% below those paid by small businesses. When 100,000 IBM employees lose their job, where do they go to get insurance if they or a member of their family has a preexisting condition? Does IBM speak for these people too? I think not!

I'm sure corporate dinosaurs like IBM would like to cut costs any way they can. But this shortsighted thinking may be the reason IBM is doing as poorly as they are. At the rate that health care costs are increasing, none of us will be able to afford insurance unless we do something about it. We need to look further down the road than the next quarter's financial statement and be in the game for the long haul. I suggest that IBM concentrate on making computers and getting out of the red and leave politics alone until they show a profit.

Marc Perkel
President
Computer Tyme
Springfield, MO
Via Internet mail

The Myth of Telecommuting?

Just as the US Congress helped to destroy the US car makers in the '70s and '80s with the ridiculous demand of 30 to 50 miles per gallon, the legislatures of this country will help to destroy business with their ridiculous demands on those very businesses. Forcing businesses into "alternatives," instead of letting the market take its course, is one sure way to kill business.

Telecommuting is to real work what Piltdown man is to history, Carl Sagan is to science, or cold fusion is to physics: a hoax.

The primary objective of a supervisor is to know what his people are doing. With telecommuting, the employee could be doing anything *but* work. Turning on the radio, watching Jeopardy on the tube, putting 4 or 5 of his favorite CDs into the CD carousel, hitting the pool, just about anything; and all the employee has to do is hit the Enter key every once in a while just to make it look like he is doing something. Getting work done? Who knows?

One of the best things a boss does is walk into an office and ask, "What's happening?" A boss can't do that with a telecommuter. You can't read that immediate expression in the employee's face or other body language.

One of the benefits of being in an office environment is the ability to go down the hall and ask the "local genius" a question or two. If you are at home, what do you do then? Call the genius on the phone? That may work. Or drop the genius an E-mail note? You may get an answer back in an hour or two.

But your productivity does not increase when you are at home doing the telecommuting shuffle. And what if you, the telecommuter, are the "local genius?" Then the productivity of every other employee decreases that day.

Just being around other people, discussing ways of doing things, is more productive than any telecommuting scheme ever devised.

So why the big push to telecommute? It sells modems, terminals, terminal emulation software, and PCs. Simple. But to claim that the employee is more productive is truly imaginative hyperbole, encouraged by all of the so-called consultants in the network business and their hardware counterparts.

Look at the list of companies that "allow" telecommuting and you will find that they are either extremely large corporations or government agencies. Note that there are no small companies which allow this type of nonsense. Why? Small companies can't afford this type of silliness. Only large, bureaucratic organizations can afford to lose work productivity, yet claim that they are helping 1) the environment, 2) the freeway congestion, and 3) the air and water that we breathe.

The only advantage to a terminal at home is when you get called late at night and you can logon and fix the problem right there. You might be able to make a case for telecommuting during the coding phase of a project. But to offer telecommuting as a real alternative to being in the office is a waste of perfectly good reading space in your paper.

And then to top it off with the psycho-babble about the isolation of people was the height of absurdity. How in the world can anyone be hired for any type of work without skills? And where do skills come from? From being in an environment, every day, where you are challenged to do your best. You cannot possibly get any skills when you are isolated from the rest of the world. The best you can do is to telecommute for an extremely short period of time, then you must get back to mingling with the rest of the staff. Otherwise, you become as uninvolved as most CEOs, resulting in the same goofy decisions.

Don Farrar
Senior Systems Programmer
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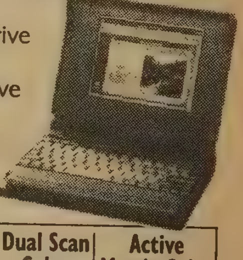

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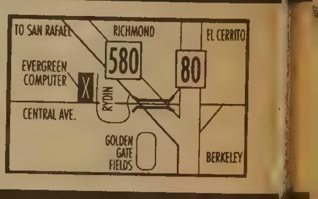

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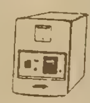

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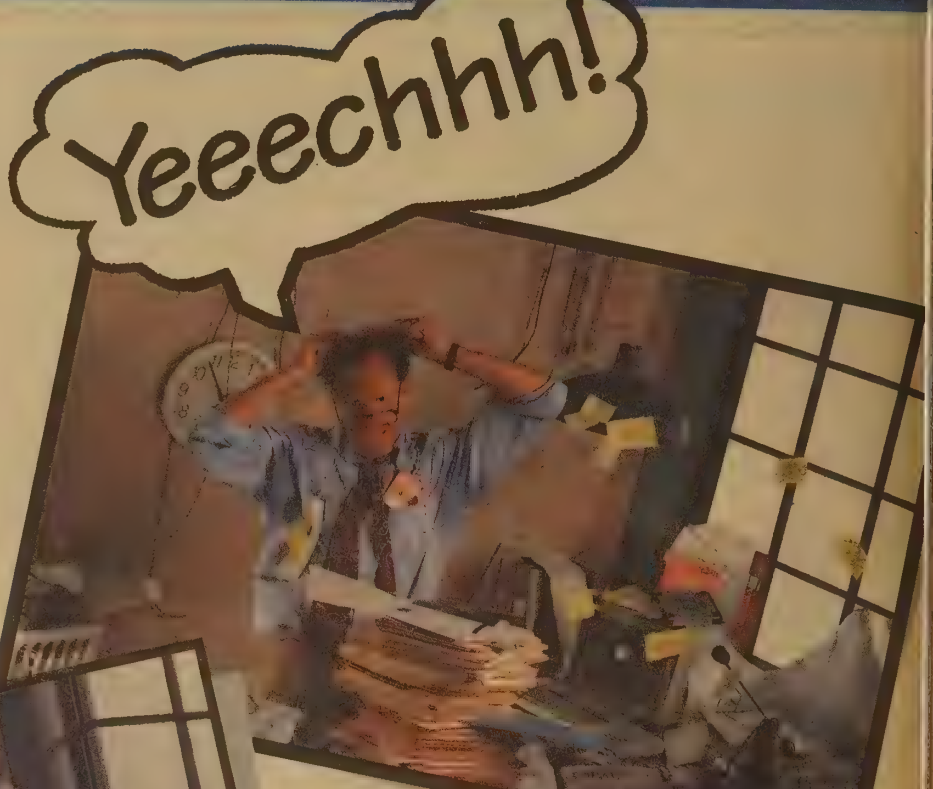
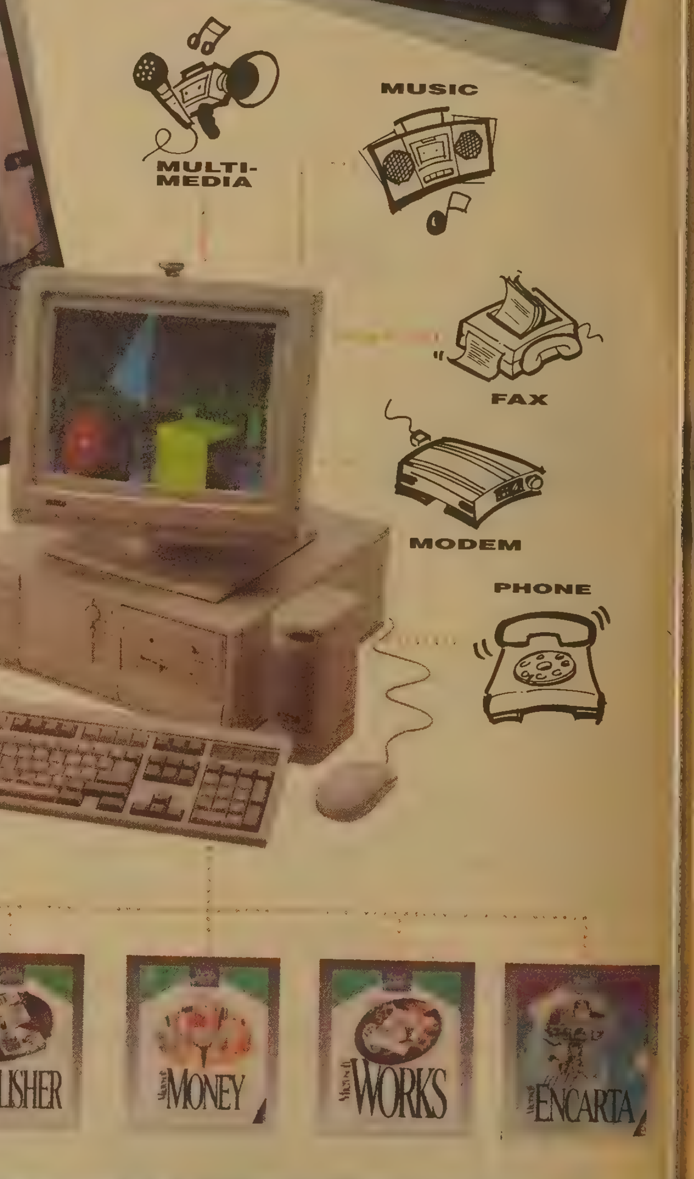


The next day, Milo finds himself in synch with his Intelesys system, in total control and ready to handle the next challenge... as soon as Betty gets back from lunch.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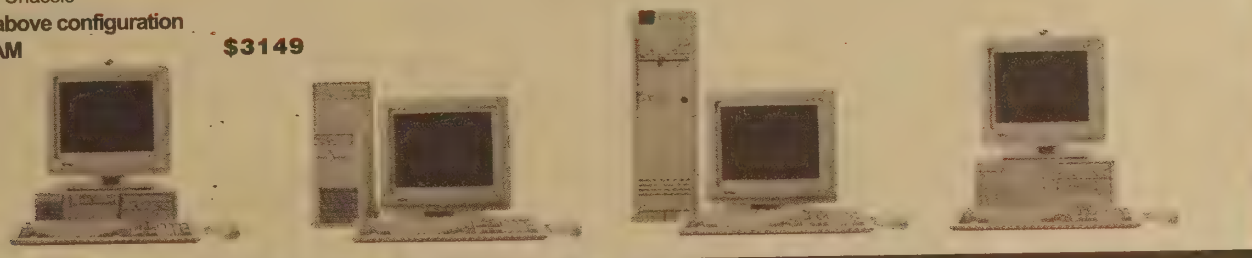

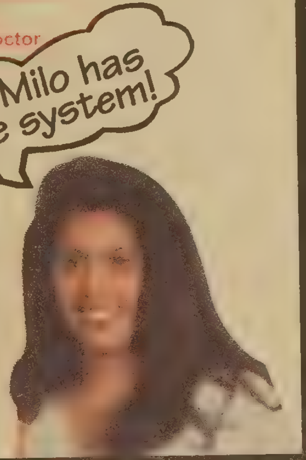
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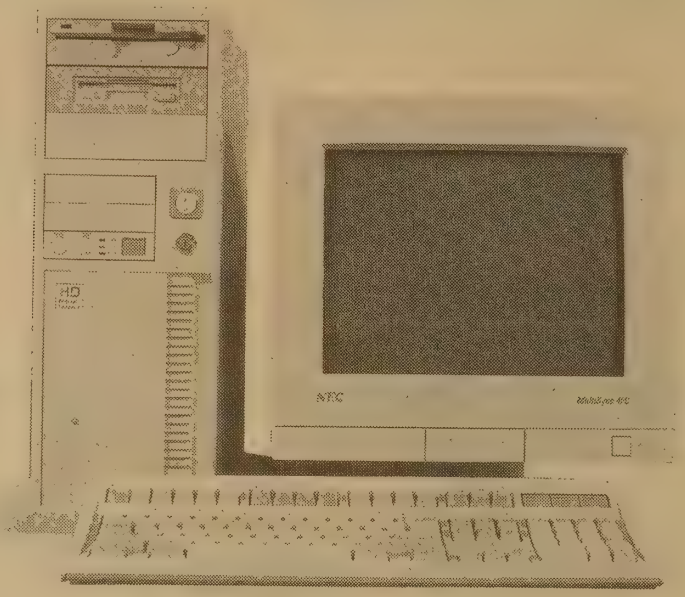

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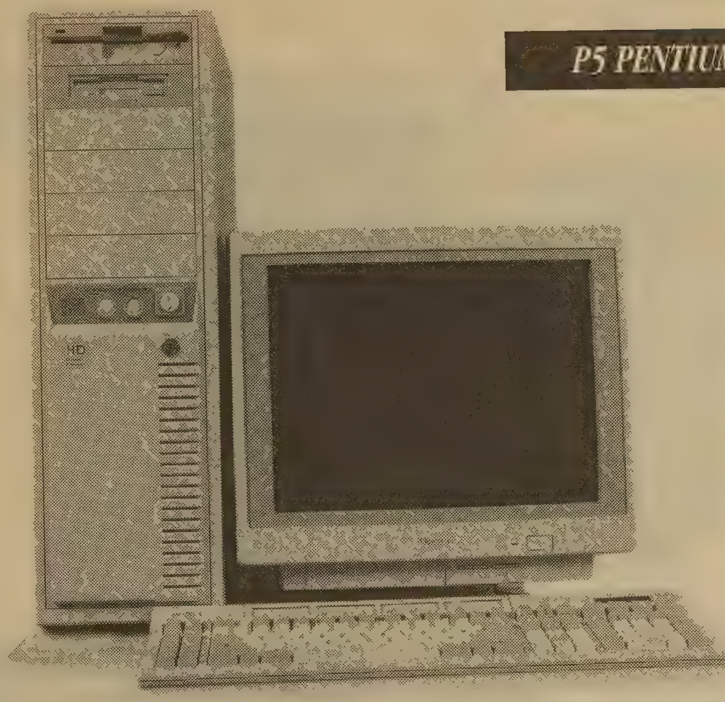

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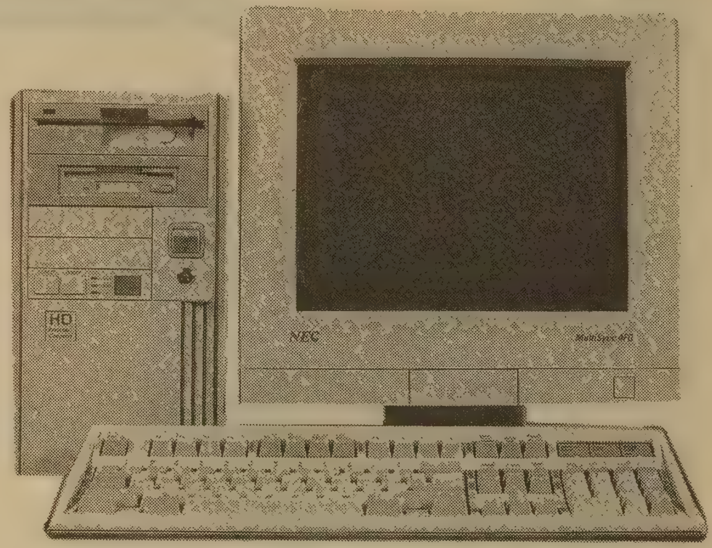

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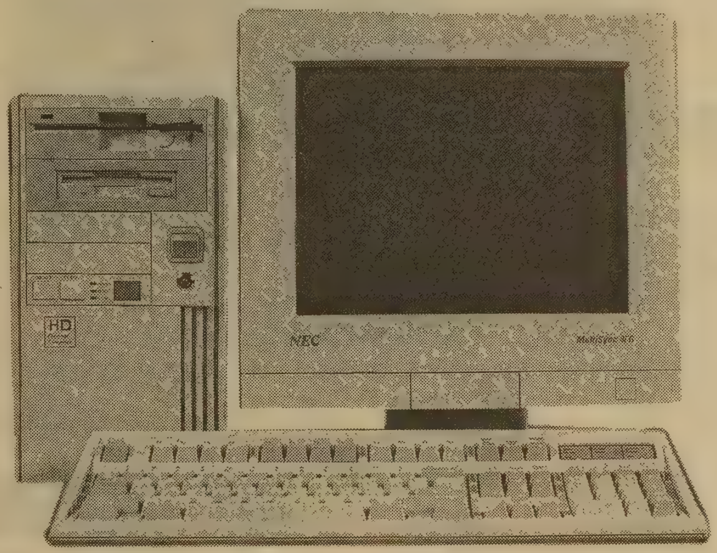

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•Sound Blaster Pro Deluxe	***$85***
•Sound Blaster 16 Basic	***$99***
•Sound Blaster 16 SCSI 2/with ASP	***$169/198***
•Sound Blaster 16 MultiCD/with ASP	***$139/179***
•Video Blaster	***$319***
•Wave Blaster	***$179***

•Gallant

•MIDI Kit	***$39***
•Gallant 4000 w/Interface, Speaker & Microphone	***$69***
•Gallant 5000 16 Bit Stereo w/Interface, Speaker & Microphone	***$89***
•Gallant 6000 16 Bit/ASP Speaker & Microphone	***$99***
•Wave Table	***$89***

•Logitech

•Logitech SoundMan 16, 16-bit Sound Card	***$98***

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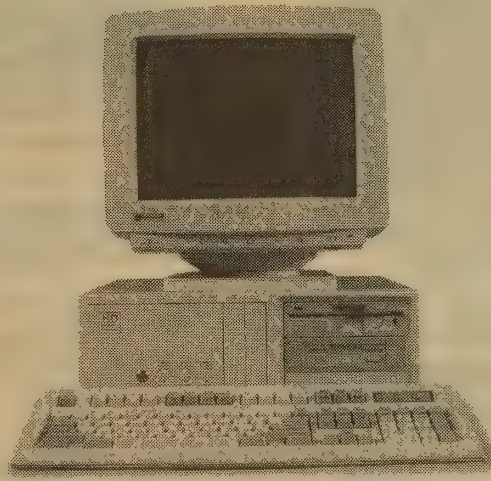
- *4MB RAM (Max 32MB)*
- *128K High Speed External Cache (Max 256K)*
- *TEAC 1.44MB Floppy Drive*
- *VESA Local Bus 32-bit Video Card/1MB*
- *14" Non-interlaced Monitor*
- *101 Enahnced Keyboard*
- *Microsoft Serial Mouse*
- *Free Mouse Pad*
- *NE-2000 Compatible Ethernet Card (Coax or 10Base-T)*

$845



HUB

4 Port 10 Base-T Hub Card	***$150***
8 Port 10 Base-T Hub	***$215***
12 Port 10 Base-T Hub	***$485***

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- *Tower Case w/ 300W Power Supply*
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- *Teac 1.44MB Floppy Drive*
- *2.1GB Wide SCSI Hard Disk*
- *Adaptec 2940W PCI Wide SCSI Controller Kit*
- *M.G.P Card*
- *14" Mono monitor*
- *101 Key Keytronic Keyboard*
- *Microsoft Serial Mouse*
- *Free Mouse Pad*

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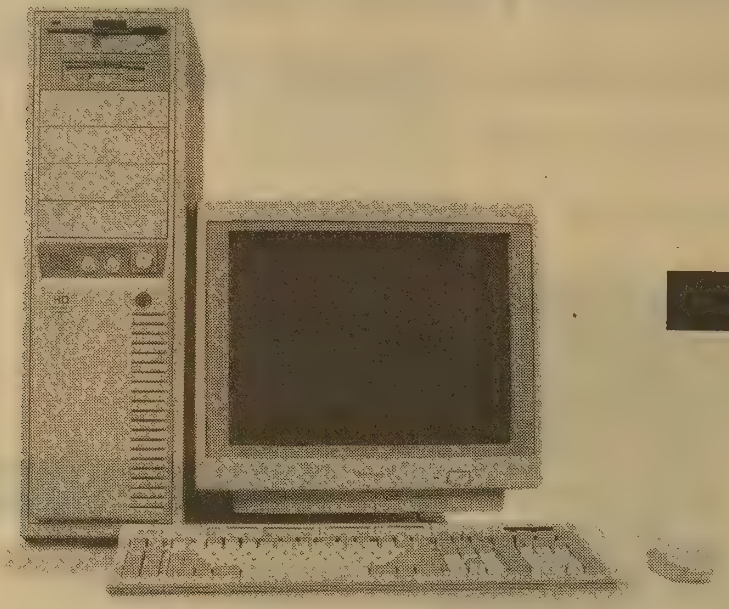

Ethernet Adapters

• DANPEX

PCI Ethernet Card	$165
EN-2000B 16Bit BNC	$65
EN-2000BT 16Bit Combo	$85
EN-2000PB 16Bit Soft Set BNC	$60
EN-2000PT 16Bit Soft Set 10BT	$60
EN-2000P3 16Bit Soft Set Combo	$75
EN-6000B Pocket Lan BNC	$137
EN-6000T Pocket Lan 10BT	$140
EN-400I 4Port 10BT Hub Card	$150
EN-800A 8Port 10BT Hub	$215
EN-1212A 12Port 10BT Hub	$485

• Accesories

RG58 Coax Cable BNC 10'	$8.00
RG58 Coax Cable BNC 25'	$10.00
RG58 Coax Cable BNC 50'	$13.00
RG58 Coax Cable BNC 100'	$25.00
BNC Straight Adapter F-F	$1.80
BNC T Adapter F-M-F	$3.80
BNC Terminator 50 OHM	$2.20
BNC Connector Crimp on RG58	$1.80
BNC Connector Mold	$2.00
Gender Change DB25 F/F, M/M	$4.00
Gender Change Cent .36 F/F, M/M	$7.00
Gender Change DB25 to Cent .36	$5.00
Gender Change DB9 to DB25	$4.00
Gender Change DB9 to Din6	$5.00
RG58 A/U Coax Cable 1000	$125.00
RJ45 8 Twist Pair Cable 1000'	$110.00
RJ45 8 Twist Pair Cable 10'	$3.50
RJ45 8 Twist Pair Cable 25'	$4.50
RJ45 8 Twist Pair Cable 50'	$9.50

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• Microdyde/Novell

NE-2000 Plus 16bit	$115
NE-2000T Plus	$115
NE-3200 EISA 32bit Coax/TP	$539
NE-2000 Plus 3	$129

Ethernet Adapters

• Compatible

NE-1000 8bit Coax	$59
NE-2000 16bit Coax/TP	$60
NE-2000 16bit Combo	$75
NE-2000 16bit 5 pack	$235
EP-888A Pocket Ethernet BNC + 10BT	$145
EP-808A 8Port Ethernet HUB	$199
EC-812 12Port Ethernet HUB	$449
EE-840 32Bit EISA Ethernet	$289

• Intel

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Intel 16bit Ethernet Combo PCLA 8100	$129
Intel 16bit Ethernet BNC PCLA 8110	$115
Intel 16bit Ethernet 10BT PCLA 8120	$115
Intel 16bit Ethernet Combo PCLA 8105/Flash	$159

• 3COM

3C503 Etherlink II 16 Coax/TP	$175
3C503 Etherlink II 16 5pack	$785
3C507 Etherlink II 16 Coax/TP	$295
3C509 Etherlink III Coax/TP	$145
3C509 Etherlink III 5pack	$645

• SMC

Ether card plus elite 16 Coax/TP	$119
Elite ultra 16bit Coax/TP	$115
Elite ultra 16bit 6pack/24pack	$675/2375
SMC Ultra 16 Bit Ethernet Combo	$135

• DLINK

DE-600 TP Pocket Ethernet 10BT	$199
DE-205 TP 16Bit Ethernet 4 Port 10BT	$290

• INFO Express Ethernet Adapter

16Bit BNC/10TP	$60
32Bit VLB/Combo	$139

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- 14" ViewSonic 6E Non-interlaced Monitor
- 101-key Keytronic Keyboard
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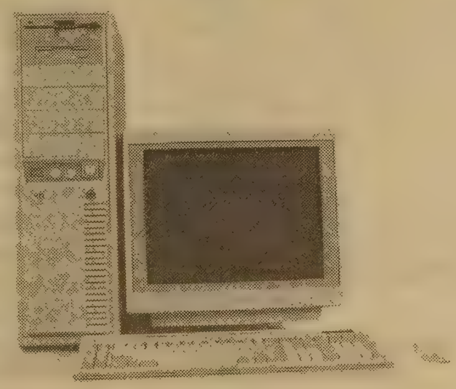

DX-33	**$1845**
DX-50	**$1995**
DX2-66	**$1945**

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M.S. DOS 6.2	**$45**
M.S. Windows 3.11	**$48**
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486SX-33	**$905**

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- 1.44MB Built-in Floppy Disk Drive
- 84 Keys Keyboard
- PCMCIA Type II Slot
- Built-in Trackball
- 10" VGA/Mono Display
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- Physical Dimensions 8.5" x 11" x 1.6"
- Weight with Battery 5.8 lbs

486DX-33 w/200MB HD	**$1730**
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- 8" Side lit VGA display, 64 shades
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- 79 Keys Keyboard
- 64 Gray Shades VGA Display
- PCMCIA Type II Slot
- Built-in Trackball
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- One PS II Keyboard/Mouse Connector
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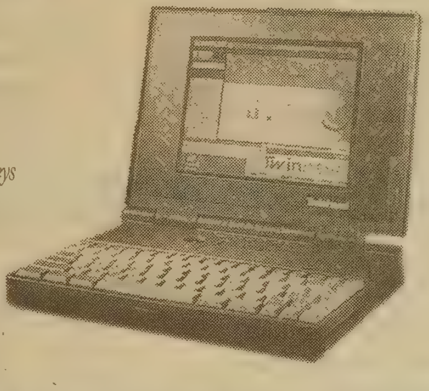
- Built-in 16mm Trackball
- Preloaded with Microsoft DOS and Windows
- 11" (W) x 8.5" (D) x 1.9" (H)/5.5lbs



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Twinhead Brilliant Color Notebook

- Intel SL Enhanced Processor
- 4MB RAM Expandable to 20MB
- 1.44MB Built-in Floppy Disk Drive
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60 MHz PCI/ISA Excalibur 256K	$1450
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66/60 MHz EISA/PCI M5PE 256K	$615
60 MHz PCI/ISA 3PCI Slots 256K	$485
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486 EISA/VLB 256K	$495
486 JX30 VLB/ISA 256K	$285
486 VLB/ISA 256K	$235

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486 VLB/ISA SIS Green 128K	$165
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486 EISA/VESA SIS 256K	$295

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1542CF+ ISA/SCSI w/Corel Kit	$312
2742T EISA/SCSI 14HDS w/Kit	$364
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AMI

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Fast PCI/SCSI Kit	$299

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Trantor

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Graphics Ultra Pro PCI/2MB	$315
Graphics Ultra Pro VLB/2MB	$299
Graphics Ultra Pro EISA/2MB	$335
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Stealth 32 PCI/VLB/2MB	$229
Stealth 32 PCI/VLB/1MB	$175
Stealth 24 VLB/ISA/1MB	$145
Stealth Pro VLB 2MB/1MB	$315/235
Stealth Pro ISA 2MB/1MB	$305/225
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Viper VLB/2MB	$339

Orchid

Celsius VLB 2MB/1MB	$239/179
Fahrenheit 1280 Plus ISA/1MB	$139
Fahrenheit 1280 Plus VLB 2MB/1MB	$189/139
Kelvin 64 VLB/PCI/2MB	$235
Kelvin 64 VLB/PCI/1MB	$189

Video Cards

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MGA-ULT/2/A VLB/ISA/2MB	$449
MGA-IMP/31A VLB/ISA/3MB	$739
MGA-Pro/4-5/V VLB/4.5 MB	$1359
MGA-Pro/4-5 Z/V VLB/Z-Buffer	$1595
MGA-PCI/2 PCI/2MB	$399
MGA-PCI/2+ PCI/Upgradeable to 4MB	$435
2MB Memory for MGA-PCI/2+	$235

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9GXe L-10 ISA/1MB	$255
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9GXe L-12 VLB/ ISA/3MB	$425
9GXe L-14 ISA/4MB	$595
9GXe 64 PCI/VLB/1MB	$195
9GXe 64 PCI/VLB/2MB	$259
9GXe 64 Pro PCI/VLB/2MB	$359
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HG 720 VLB/2MB	$359
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HG 610 VLB/1MB	$249
S 501 VLB/1MB	$149
S 801 PCI/1MB	$149
D 601 VLB/1MB	$169
D 602 VLB/2MB	$229
D 702 VLB/2MB	$249
D 902 PCI/2MB	$249

Cardex

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ET-4000 W32 VLB/1MB/2MB	$125/185
CIRRUS LOGIC 5428VLB/1MB	$95
UMC/IDE VLB/1MB Built-In IDE/ID	$115
WD ISA WD Chipset /ISA	$95

Others

M.G.P. Card	$25
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Intel PCMCIA 14.4K INT	$415
U.S. Robotics	
14.4K Fax Modem INT/EXT	$108/135
28.8K Modem 14.4K Fax INT/EXT	$199/235
Hayes	
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BY ED KAHN

An Old Standard Returns

Borland Has Bought Your Way Software To Use In Sidekick For Windows

Back in the days of using a CP/M-based personal computer I would find myself dreaming of getting an IBM-compatible system. One of the strongest reasons was to be able to use Borland's Sidekick. In those long-gone days, Borland's popular personal organizer product was found on nearly every MS/PC-DOS computer I encountered. While it may not have been as powerful as a program like VisiCalc, Sidekick commanded a loyal following.

> There are only two ways to talk with a technician: an 800 number that costs $14 per call or a 900 number that costs $2 per minute with the first minute free.

More recently, when I first switched to Windows, one of the small but important programs that I missed was a good telephone manager. I eventually found a relatively obscure product that met most of my needs. YourWay not only dialed phone calls for me, but also included a calendar and scheduler that I seldom used. But even if I did anything more than use YourWay as a rolodex, it was definitely worth the few bucks it cost. As each new version was introduced, additional improvements were incorporated into the basic design. However, there always seemed to be several things I hoped would be fixed in the next release.

Then, one day, I received a product announcement offering to sell me a new version of Borland's Sidekick tailored to Windows. Interestingly, the flyer advertised that YourWay files could be easily transferred into Sidekick for Windows. I phoned the makers of YourWay and learned that, yes, they had sold their technology to Borland. I was delighted and phoned Borland for a copy of the new program. Borland has always been a fine company with excellent products. Surely they would be smart enough to make the improvements I thought YourWay needed.

I couldn't wait to install Sidekick for Windows onto my system. Installation was a breeze. Transferring my old rolodex from YourWay into Sidekick was simple. Only once I was up and running did I begin to notice the changes—some were the improvements I had been waiting for; others, however, were steps backwards. Basically, Borland had gutted YourWay of some of its most powerful features.

YourWay was particularly useful when I wrote a letter. Inside every program running under Windows, an icon would appear at the top of the screen that would allow you to instantly go into whichever module of YourWay you wanted to use. Clicking the icon again returned you to the program where you began. Sidekick has this feature, but various modifications not necessarily for the better were made to the edit menu of the address book. One example of these changes was the ability to transfer an address, with first name first and last name last, from YourWay's rolodex into a word processing document. This meant that the program could insert an address directly into a letter I was writing, saving time and removing the possibility of making a mistake when retyping the information. This feature, unfortunately, has been eliminated from Sidekick for Windows.

Another nice feature in the old program was that you could not only track phone calls, but instantly get access to a notepad linked to individual rolodex listings. This was a great place to keep all kinds of information. While it still exists in Sidekick, this feature has become more cumbersome to use.

To be fair, I must say that Sidekick for Windows is a good program, and if I had never seen YourWay I would probably be very satisfied with Sidekick. But there are too many compromises for me and I have gone back to using YourWay 4.0. It is hard to understand why a company like Borland would eliminate some of the most useful features from this powerful program.

Another shock came when I called Borland's technical support. I was told that there are only two ways to talk with a technician: an 800 number that costs $14 per call or a 900 number that $2 per minute with the first minute free. While it is true that you can currently buy the program for a bargain price of only $29 (regular list price: $99), you could easily spend that much again if you have any questions.

I attempt to review products that are worthy of your attention and not spend time talking about products to avoid. I devote so much time to the negative side of Sidekick only because Borland is a major vendor and I am surprised at what it did to a program that needed only a few refinements to be a truly spectacular product. Sometimes the need to put a personal stamp on a product is simply too strong. For my money, Borland would have done well just to adopt YourWay, put its name on the package, and fix a few bugs. With its name and distribution, I suspect Borland would have had a smash hit.

Borland is using Sidekick for Windows to introduce Borland Simplify, a new division which will market simple programs for individual users. I wholeheartedly applaud this move. Many of the programs currently available have grown in response to the needs of power users working on networks. Simple programs that help individuals in their daily tasks are becoming scarce.

Sidekick for Windows, with calendar, notepad, cardfile, and scheduling modules is a move in the right direction. I look forward to other Borland Simplify releases from its Consumer Products Division. The concept is good and will meet the needs of many individuals who are searching for the right tools, not bulldozers, to get their jobs done efficiently. ■

RESOURCES:

Sidekick for Windows
Borland International Inc.
100 Borland Way
Scotts Valley, CA 95066-3249
1-800-431-1000

YourWay
Prisma Software Corp.
2301 Clay St., Suite 100
Cedar Falls, IA 50613
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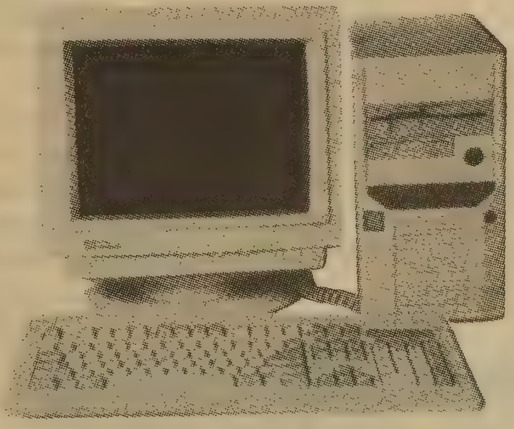

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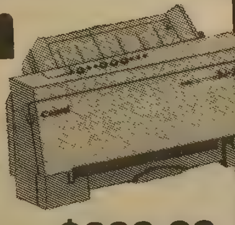

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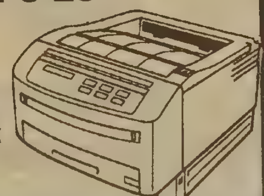

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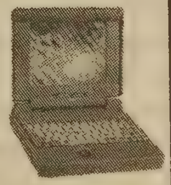

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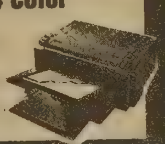

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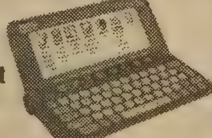

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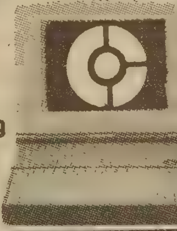

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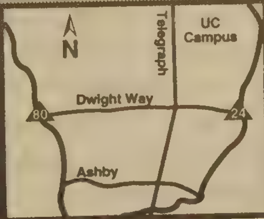

Computer Of The Month

Legacy Notebook

Notebooks come in almost any configuration imaginable and can be tailored to meet the needs of almost any specialized customer. This month, I review a computer that incorporates more flexibility than I have previously encountered in a portable. But before discussing that, let me begin by describing the Mobile Office Systems Legacy notebook in its least expensive configuration.

For $1395 you get a monochrome local bus system with 4MB of RAM, expandable in increments up to 20MB (costs ranging from $195 to $749), 170MB IDE hard drive, and a 3.5" floppy drive. The notebook is powered by an 80486 CPU running at 25MHz. It weighs just under 6.5lbs., including the battery pack, with a footprint about the size of a piece of business stationary, and is less than 2" thick.

The display measures 9.5" diagonally. A video port on the back of the unit allows you to attach a color monitor. The keyboard is well designed, but you also have the option of attaching an external keyboard or a numeric keypad ($60). If you are working in a different language, the built-in keyboard can be changed by the user.

I have featured many high-end portables, but felt it was important to focus on an entry-level notebook this month because many readers have asked about inexpensive portables that will still get the job done. This is definitely not one of the least expensive machines I have seen. Occasionally, there are ads for portables for under $1000, but they lack the features and flexibility of this one.

What I like most about the Legacy is its modularity. Again, in the past I have discussed modular machines, which I believe are the wave of the future, but I have seen none that are designed around such complete flexibility once you own the computer.

If you buy the Legacy in its least expensive configuration and later decide to upgrade, you can change *everything* yourself except the motherboard. Starting with the guts of the machine and working out, Legacy offers a choice of three CPU brands: Intel, Cyrix, or AMD. You can change this component yourself. If you need assistance, tech support will walk you through the process. You can buy these components anywhere—not just from Mobile Office Systems. Likewise, for the hard drive they offer a choice of five different brands, or you can go to any store to purchase a 2.5" hard drive. The hard drive is held in a slip-out holder by four tiny screws. There are no electronics or jumpers or anything else that will scare you from changing this component yourself.

TFT
STN
MONO

The Legacy notebook incorporates more flexibility than I have previously encountered in a portable.

If you decide to move from a monochrome to color display, you can choose a dual scan passive color or a top-of-the-line active matrix color display. Remove a few screws and replace the old with the new. This part will probably have to come from Legacy.

Impressive as this all is, there is still more to the modularity of the Legacy notebook. On the right side of the main unit is a removable function module that will accommodate almost any accessory you might need. The range of options is staggering: PCMCIA slots, fax/modems ($150), SCSI modules, LAN interfaces, scanner interfaces, extra serial port, even a multimedia kit ($485). Simply snap one module out and insert the next. This is great for those whose needs vary at different times. For instance, you might want to use the trackball when on-the-go, but switch back to a PCMCIA card when you get to your destination. The possibilities are endless, and changing modules is so simple that there is no reason to stick with a single configuration.

The list of options also seems endless. A docking station is available ($425). If the two hours of battery life are not enough, there is a double battery pack ($220). Both NiCd ($95) and NiMH ($140) rechargeable battery packs are available.

While this is not a well-known company, I believe the Legacy notebook is a safe buy because so many of its parts are generic. You can buy new components at any computer supplier and fit them into the box. Although some parts like switches and latches are not generic, Mobile Office Systems provides a one-year warranty. If you are worried, for $169.95 you can buy a policy from GE that gives an additional three years. This coverage includes telephone consultation, and if the problem is not resolved, they will come to your office or home. With this additional warranty, you are assured of four years of dependable service.■

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RESOURCES:

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LANS • BY PETER JOHN HARRISON

Accessing CD-ROMs Across The Network

A Look At Three NetWare CD-ROM Server Solutions

Making CD-ROM drives available across a local area network offers several advantages to providing individual users with their own drives. First, there is the cost of buying and installing CD-ROM drives on each workstation that needs one, as well as the cost of upgrading them later when faster drives become available. Then there is the cost of the CDs themselves. You can really run up a tab buying the same CD title for everyone who uses it; while if you buy a limited number of copies that will be shared, some are going to be lost. Worse than losing a disk, if you rely on time-sensitive databases, someone may mistakenly use an older version CD. Setting up a CD-ROM "server" with several drives and network licensed copies of the software provides LAN administrators with a centralized approach to CD-ROMs that is easy to control and keep current.

Peer-To-Peer CD-ROM Servers

Setting up a CD-ROM server for a peer-to-peer network like Artisoft's LANtastic, Moses Computing's MosesAll, or Microsoft Windows for WorkGroups, is pretty easy. After installing the CD-ROM drive(s) to a "server" workstation, modify the CONFIG.SYS and AUTOEXEC.BAT files to include the CD-ROM driver and MSCDEX.EXE program (the Microsoft CD-ROM Extensions), then add the CD-ROM drive to their server's local resources list. Any PC on the LAN will have access to the CD-ROM drive on the server. (Your LAN documentation should include specific information on how to add and use new LAN resources.)

NetWare CD-ROM Servers

Setting up a CD-ROM server for Novell NetWare 3.xx and 4.xx LANs is a little more involved. I've worked with three NetWare CD-ROM server products: Corel SCSI, Micro Design SCSI Express, and MicroTest DiscPort. Each has a somewhat different approach to providing network users with CD-ROM services.

Corel SCSI's NetWare utilities make it easy to install, maintain, and use a CD-ROM server—and it does this for a fraction of the cost of other CD-ROM server products. It includes software that runs on the server and each client workstation. This is both a blessing and a curse: a blessing because the CD-ROM drive will work as though it were a local drive, and a curse because, like a local CD-ROM drive, it requires a lot of precious conventional memory to load the program modules.

SETTING UP A CD-ROM "SERVER" with several drives and network licensed copies of the software provides LAN administrators with a centralized approach to CD-ROMs that is easy to control and keep current.

The second product, Micro Design's SCSI Express, mounts CD-ROMs on a NetWare server to act like a conventional read-only NetWare volume. This allows the server to cache CD-ROM directory structures and speed up CD-ROM access. Making CD-ROMs act like standard NetWare volumes also allows workstations to "map" them like any other NetWare volume, which preserves precious RAM. SCSI Express is a high-end, high-performance suite of SCSI utilities, but that power comes at significant cost.

SCSI Express is a more complicated product to install (practice installing it on an off-line server before you try installing it on a production unit), and it costs ten times as much as Corel SCSI. For that price I expect a sterling product with great documentation and strong aftermarket technical support; and SCSI Express is technically excellent, as long as you don't step outside the boundaries of what it provides. I found that the Micro Design replacement for Novell's NetWare ASPI disk drivers aren't ASPI-compatible, and as a result most major file server-based backup products won't work on a server running SCSI Express. Still, that's not a major limitation if you can work around it.

What disturbed me most about SCSI Express was Micro Design's support policies. After being shipped the wrong version of SCSI Express by a reseller, I tried to arrange a credit card purchase of the correct version directly with Micro Design, but was gruffly informed that it was a "reseller problem," and I would have to resolve my problem with the reseller. This delayed the installation of my client's CD-ROM server by several days, and gave the impression that Micro Design doesn't care if the end-user is satisfied with its product or not.

Corel SCSI and SCSI Express are both software-based products. The third CD-ROM server product in my round-up, the MicroTest DiscPort, is a hardware solution. DiscPort is a standalone server for up to seven CD-ROM drives. Unlike the

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other CD-ROM servers mentioned here, the DiscPort can be installed without taking a NetWare server down, and it's very easy to install and maintain.

In many ways, DiscPort is reminiscent of standalone print servers, such as the Intel NetPort or HP JetDirect card. Similar to the NetPort, DiscPort is a small box that connects to a peripheral you add to the LAN. Also like any of the better standalone print servers, DiscPort comes with software that makes configuring and maintaining the server a snap.

Priced about halfway between the cost of Corel SCSI and SCSI Express, I'm very pleased with the DiscPort's price/performance ratio.

Though I did encounter a glitch while I was installing the DiscPort (see below), the installation process was otherwise straightforward and easy to follow, and the documentation was good. When I did run into trouble, technical support was courteous and helped me find a solution quickly.

RESOURCES:

Corel Corp.
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MicroTest, Inc.
4747 N. 22nd St.
Phoenix, AZ 85016
(602)952-6400

MicroDesign International, Inc.
6985 University Blvd.
Winter Park, FL 32792
1-800-228-0891

The problem I had with DiscPort centered on the CD-ROM drive I was planning to use. I found out the hard way that I needed a "powered SCSI terminator" to get DiscPort to work with this particular drive. Indeed, most of the drives I considered required a powered terminator—something MicroTest doesn't include as standard. Terminators have to be ordered separately, and because this isn't something you can easily pick up at your local computer store, not having a terminator can put a nasty kink in your installation schedule.

> A CD-ROM server isn't necessarily the right solution for all networks.

Aside from this one problem with DiscPort, I'm very happy with it. I think DiscPort is the NetWare CD-ROM server solution to beat.

No matter what CD-ROM server you do pick, having a CD-ROM server isn't quite the same as having an individual drive installed on your workstation. Some applications require the installation of an MSCDEX or MSCDEX look-alike support module (which is included with all the solutions mentioned here) before they'll work properly, and multimedia applications don't always work well across a LAN. Although a CD-ROM server isn't necessarily the right solution for all networks, for installations where multiple users often need to share the same CD-ROM resources, servers can be the best method available for making sure everyone has access to the resources they need.■

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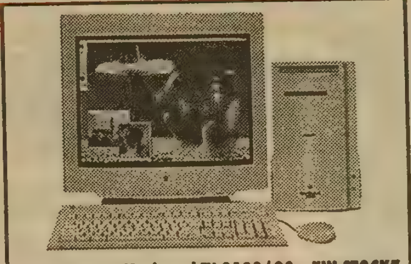

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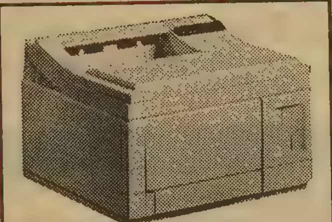

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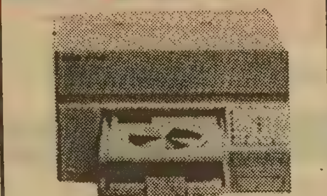

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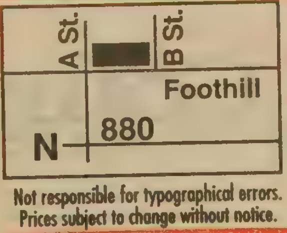

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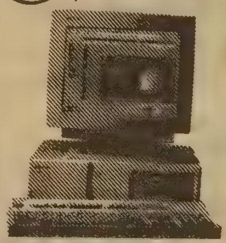

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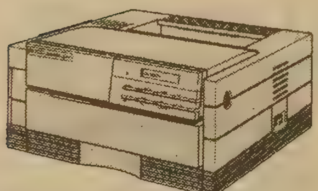

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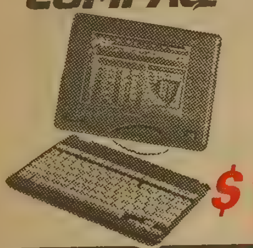

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UNIX • BY BENNETT FALK

File Type Zen: Overcoming The Fear Of Binary

Tens of thousands of times each day, people using file transfer programs (kermit or ftp, for example) have to answer the embarrassing question "Text or Binary?"

More often than not, the person at the keyboard assumes that this is a question about the contents of the file. Most people at most keyboards don't know how to classify a file's contents (there's no earthly reason why they should). They grumble, quite rightly, that the computer is better placed to make a judgment about the contents of a file than they are. They understand intuitively that this question is an invitation to shoot oneself in the foot. They answer the question with a guess. Sometimes they guess incorrectly.

What's happening here has less to do with ignorance than with a subtle breakdown in communication between people and computers over what constitutes the type of a file. The simple question "Text or Binary?" obscures the fact that a file's type can't be determined from its contents alone. To see why, we need to look more closely at what Binary and Text mean.

What Is A Binary File?

If you want to be picky, all files are binary since everything is stored on disk in binary format, that is, a series of ones and zeroes. More realistically, a binary file is just an arbitrary stream of bytes. In a way, saying that a file is binary is a way of saying you don't know what a file contains or how it is structured. Binary is, if anything, a non-type.

What Is A Text File?

Leaving aside the issue of how to represent text in non-European languages, there really shouldn't be much dispute about what text files are at all. Text files are files that contain only byte values from one of the standard "printable" character sets (such as ASCII). These character sets assign byte codes (okay, numbers) to the letters of the alphabet (both upper and lower cases), the ten digits, a few common typographical symbols, SPACE, TAB, and the punctuation marks. Essentially, a text file is any file that contains only those characters that can be produced on a typewriter keyboard.

Text And The Display Device

That sounds straightforward, but it's actually the source of the problem: almost everyone who bothers to define "text" or "text file" defines these terms relative to some kind of display device (typewriters, for example, or terminals, or teletypes). "Text" is often a synonym for "printable," but what that means depends on what kind of device is doing the printing.

For older computers, the teletypewriter was the display device that determined what text was. Text was anything that could be printed legibly on a teletype. To be printable, the text had to contain codes for the teletype's mechanical operations (like carriage return and line feed), in addition to the letters and numbers that made up the text's content.

The easiest thing to do was to put these codes directly into the file. After all, the teletype was the tool of choice for input as well as for output. Consequently, the computer world inherited the teletype convention of indicating the end of a line of text with a two-character sequence: carriage return, line feed (often abbreviated CR/LF). This is an extraordinarily persistent convention, faithfully reproduced in generation after generation of computer systems to which no teletype will ever be attached.

The original UNIX systems raised a modest challenge to this convention in the name of device independence. UNIX systems use only the line feed character (abbreviated LF) to indicate the end of a line of text. The rationalization for this is that using two characters to signify the end of a line of text wastes disk space, and if mechanical controls of some kind are needed for display devices, they can be inserted when the file is displayed on that device. After all, sooner or later, there will be other devices with other requirements.

> MANY UNIX USERS FIRST "LEARN" THE DIFFERENCE BETWEEN TEXT AND BINARY FILES BY QUITE INNOCENTLY TRYING TO USE "CAT" OR "MORE" TO DISPLAY A FILE THAT HAPPENS NOT TO BE TEXT.
>
> **CHAOS USUALLY ENSUES.**

This challenge to the hegemony of the teletypewriter resulted in a great divide, not at first between text files and binary files, but between different formats of text files. Moving a text file from one system to another became a tricky thing: files from remote systems had to be scrutinized and possibly modified (by either adding or stripping out carriage returns) to conform to the receiving system's end-of-line convention. Invoking the "ascii" mode in ftp (the Internet file transfer program) does just this: it adjusts the end-of-line markers

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Unix *continued...*

in the transferred file to whatever is appropriate for the receiving machine.

Text And Binary: Practical Significance

Because there's no universally agreed upon way to represent text, transfers of text files aren't necessarily "byte-for-byte" copies of the originals. Sometimes, of course, a byte-for-byte copy is exactly what's wanted, and consequently, ftp has a "binary" mode to ensure that you can get an exact copy of a file when you need one.

THE DISTINCTION BETWEEN "TEXT" AND "BINARY" EXISTS BECAUSE THERE IS NO UNIVERSALLY ACCEPTED WAY OF REPRESENTING TEXT.

The point is that the distinction between "text" and "binary" exists because there is no universally accepted way of representing text. If there were only one way to represent text, every file transfer could be a byte-for-byte copy, and there would be no need for the distinction between text and binary.

Notice that with a file transfer program like ftp, the choice between ascii and binary modes of file transfer is influenced by two things: how the file will be used on the receiving system and what the file contains. You only need to select the ascii transfer mode if you intend to treat the file like text on the target system (that is, the system to which you're copying the file).

This idea (that the type of a file is determined in part by how it is used) has a simple corollary: the uses of a file (and hence its type) depend on the programs that operate on it.

Unplanned Adventures

Quite apart from any transfer of files between systems, many UNIX users first "learn" the difference between text and binary files by quite innocently trying to use "cat" or "more" to display a file that happens not to be text. Chaos usually ensues. At the very least, the file looks like gibberish. Its contents may put the terminal (and any other equipment they pass through) into "some weird mode."

The natural tendency in the wake of this experience is to think that text files are plain or "normal" and that "binary" files are something that require special handling. Like so many other things, this is an illusion. All files require special handling. In the case of text files, the UNIX tools that do that handling are things like "cat" and "more", but these tools are just as specialized as GIF viewers file compression tools.

The real lesson to be learned from using "cat" or "more" on files that aren't text is that the connection between files and the programs that make sense of them is often tenuous. Some applications will happily try to use files they don't understand, others fail to recognize files of their own creation. As with file transfers, this is not a "user head space" problem, but a flaw in the way applications are built.

A file, its type, and its uses are all closely related. The identity of a file depends on the program for which the file was created. On most systems (Macintosh being the notable exception), nothing protects the relationship between an application and its files. Many systems address this problem with file managers that associate files with applications by name alone. This helps, but the name associates are superficial and too easily fooled.

There is some risk in making the connection between files and applications more binding. Tightly coupled files and applications might be more difficult to transfer into "foreign" environments. Users who have learned to misuse files creatively might be inconvenienced.

Risks aside, however, you really shouldn't have to go to school for years and years just to learn how not to shoot yourself in the foot. ■

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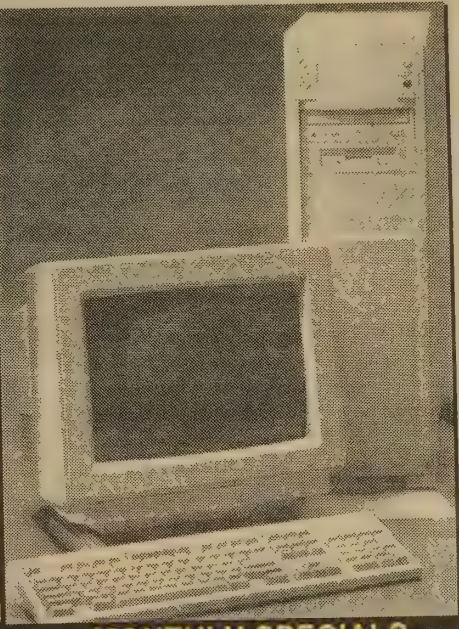

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TELECOMMUTING • BY ROBERT MOSKOWITZ

What Can We Learn From Telework Facilities Exchange?

A new report offers insights into strategies and solutions that can make telecommuting even more viable and popular.

Readers of this column are familiar with the notion of exchanging facilities, most particularly in connection with California's Telework Facilities Exchange Program (or TFEP).

Briefly, the idea behind facilities exchange is that a telecommuter who works for company A can travel to the offices of company B, selected because they are located very near his or her home, and telecommute to work from there instead of from home or from a standalone telecommuting center. The "exchange" part comes in because an employee of company B can also telecommute, perhaps from offices of company A, but more likely from offices of company C.

The result is a game of "musical offices" in which each company theoretically gets a fair return on the loan of its facilities to others. As a practical matter, however, the presence of people from one organization on another organization's turf creates significant issues that require coordination, negotiation, and the establishment of some basis for maintaining fairness and equitability. That is one of the roles played by staff of the TFEP.

Attractive in theory—if only because all these offices already exist and could be put to use immediately at little or no start-up cost—it is only now that any practical experiences with facility exchanges are coming to light. The Final Report of the TFEP offers some interesting and unique insights into strategies and solutions that can make telecommuting even more viable and popular.

The Final Report: Findings & Insights

The Facilities Exchange approach to providing workplaces (or seats) for telecommuters is more cost-efficient in three ways than alternative methods that develop telework centers and then try to fill them with telecommuters. First, there are no development costs, since the workplaces or seats already exist. Second, there are no (added) administrative costs since the workplaces are already part of functioning offices with their own administrators. Coordinators of facility exchanges at each of the host sites tend to be donated by the host organizations. Third, there are no wasted or unused seats, since there are no efforts to identify a workplace for exchange until there is a telecommuter willing to fill it.

Let's take a look at the numbers in more detail:

A typical fixed-site telework center might cost $300,000 for equipment, build-out, furnishings, cabling, and so forth, with another $30,000 spent on start-up design and planning. Annual rent might be $90,000. Center management, marketing, and advertising might add another $80,000 to its operating costs. In the first year, this amounts to $500,000, or about $42,000 per month. In the second and later years, rent, management, marketing, and advertising would require annual operating expenses of $170,000, or about $14,200 per month.

Facility exchanging, however, requires no capital expenditures and no annual rent. Its main expenses are only for marketing and advertising, and for management—which in this case includes recruitment, matching teleworkers with facilities, and continuing support as needed. Plus, the number of workplaces at a fixed-site center are necessarily limited, while the number of workplaces that can be made available under a facilities exchange program are limited only by the willingness of telecommuters and host organizations to participate.

An added benefit is that facilities exchange programs are far more flexible in geographical coverage than development of a particular telecommuting center. Studies show virtually every home in a U.S. urban area is within a few miles of some government or private office facility. Within a short time, a new seat can nearly always be found close to any willing telecommuter(s), while a fixed-site telecommuting center can successfully draw telecommuters from only a few miles around it. Drawing from any greater distance would only throw away the center's advantage in reducing commuting times and distances.

> Guest teleworkers are more easily found in the suburbs and outlying communities, while organizations willing to allow employees to telecommute are clustered in the central business districts.

Another cost-effective aspect of facilities exchange is that organizations willing to be "hosts" to visiting telecommuters generally have more than one seat to offer, and each seat may be available several days per week. This means

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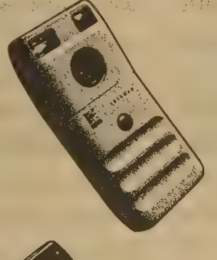

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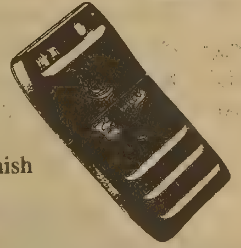

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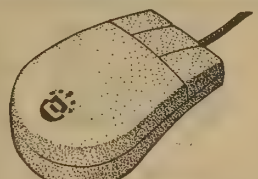

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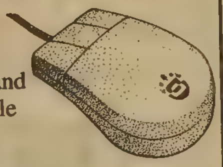

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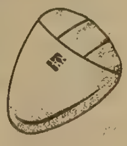

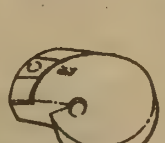

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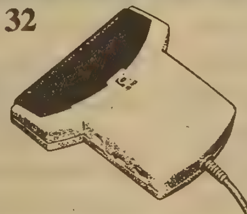

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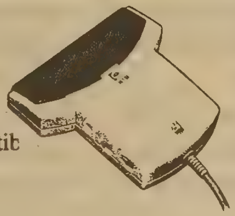

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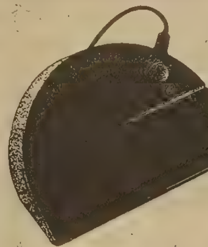

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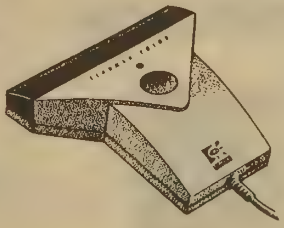

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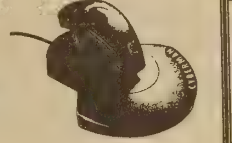

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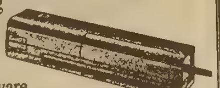

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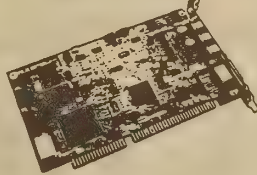

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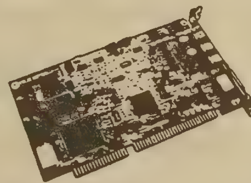

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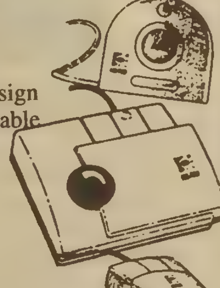

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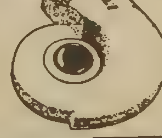

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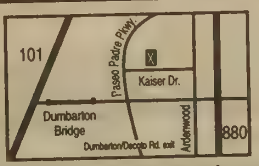

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that the cost of finding the first seat for the first telecommuter in a given area constitutes the biggest outlay. From then on, it's free or very cheap to find more seats for other telecommuters living in the same area. The implication is clear—as more telecommuters participate in facility exchanges, the cost per participant will plummet.

Training those in the Facilities Exchange program tends to be more expensive, primarily because they must be trained one or two at a time, rather than in the larger groups normally available when an organization launches a telecommuting project. So far, this has not become a major problem, because participants were able to get the bulk of their telecommuting training directly from their employers. However, special training materials were developed for the TFEP, and proved quite effective when given to each telecommuter for review with his or her direct supervisor.

An interesting pattern emerging from the TFEP experience to date is that host organizations willing to make seats available to guest teleworkers are more easily found in the suburbs and outlying communities, while organizations willing to allow employees to telecommute from other facilities are clustered in the central business districts. This works out very well in practice, because teleworkers tend to live in the outlying residential areas, close to workplaces available for exchange.

Another interesting conclusion is that participation in facility exchange is not as simple as "yes" or "no." Instead, participation builds gradually from initial interest until, after a period of time, the organization agrees to contribute teleworkers, workplaces, or both. TFEP staff termed this gradual move toward participation "the pipeline."

The earliest steps along the pipeline include an expression of interest by an organization, the identification of potential workplaces or telecommuters, and their approval by department heads and also by senior management. These steps tend to be focused inside the organization, and there is little anyone on the outside can do to hurry them along.

A second set of steps along the pipeline, however, TFEP staff can more readily facilitate. These include matching a teleworker to an available workplace, training the teleworker and the host coordinator, getting the teleworker to approve the available workplace, and getting appropriate managers to approve the schedule for use of the workplace.

In this pilot phase of the TFEP, sixty-six organizations were approached about offering a host seat for a guest teleworker. Thirty-one declined, but thirty-five organizations made it through the pipeline and now offer fifty available workplaces, of which thirty-one were put to regular use and remain in regular use today. In sheer numbers, this makes the TFEP the second largest (and the most cost-effective) telework center (staff call it an "uncenter") in California.

One of the most important factors in moving organizations along this pipeline turned out to be the presence of a local champion. These people were instrumental in identifying available workplaces, securing approvals from department heads and senior management, providing

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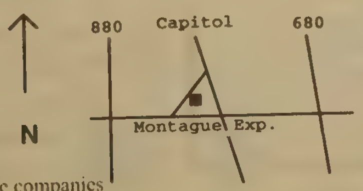

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information to and coordinating site visits by potential guest teleworkers, and maintaining a schedule of workplace use and availability.

Not surprisingly, therefore, the loss of such a champion mid-way in the process of bringing the organization up to speed created a major barrier to successful participation in the TFEP. When a local champion leaves, or is reassigned to another part of the organization, readiness to participate in facility exchange tends to falter. Apparently, organizations are short of the resources needed to sustain their effort to join the TFEP. Perhaps if these efforts receive a higher priority in the future from senior management, the torch could be readily passed to a new champion and progress toward participation would continue.

TFEP Telecommuters

A survey of TFEP's telecommuters yields some interesting insights. Half of the telecommuters are professionals, with another 38% describing themselves as managers and professionals. One is a para-professional. They tend to be stable employees, averaging nine years with their current employer, more than five years in their current work group, and more than four years in their current job assignment.

Nearly half of these participants favor a regular schedule of telecommuting days, while another 40% are comfortable with a regular schedule that can be changed according to the needs of their work group. Only 16% of the participants want to leave their telecommuting days open to ad hoc changes all of the time.

More than three-quarters of these telecommuters come from offices with compressed work weeks, with 50% on a 9-day/80-hour schedule and another 25% on a 4-day/40-hour rotation. This is important because many front-line managers who resist telecommuting do so by arguing that it is totally incompatible with a compressed work week. Clearly, it is not.

Comparing Workplace Facilities

Comparisons between telecommuting from an exchange facility and telecommuting from home are also favorable. Participants tend to rate the exchange facility higher than a home office in terms of productivity and ability to do various types of work. Supervisors tend to rate an exchange facility as more desirable and acceptable than a home office.

And while commuting to an exchange facility is theoretically not much better than commuting to work, in practice, it cut commuting mileage and commuting time for today's participants by about 88%. Nearly 85% of the TFEP's telecommuters normally drive to work in a single occupancy vehicle. All but one (who walks) drive to their TFEP workplace the same way, but on these days they tend to use surface streets instead of freeways, and they drive an average of 33 miles less each way! They also reduce their commuting time an average of 54 minutes each way. This amounts to some 7000 fewer miles per month for participants in this pilot phase of the TFEP. The savings would be vastly greater as soon as more employees began telecommuting to an exchange facility.

One theoretical concern about facility exchanges is that telecommuters will want equipment and space requirements that are simply not available for exchange. In practice, however, participants described as "ideal" a telecommuting workplace that was very close to the workplaces actually made available. Most of the available seats include a PC-compatible computer with a color monitor, and access to a telephone, fax, and copier. Macintoshes and laptops are relatively unpopular among these telecommuters. About a

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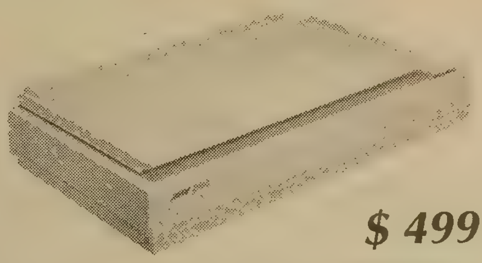

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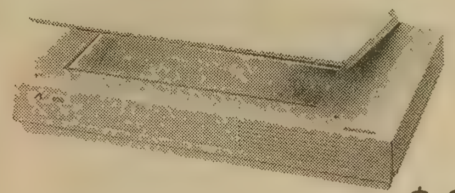

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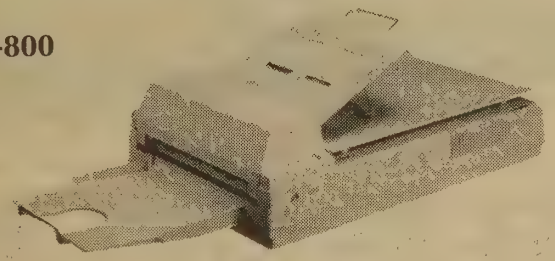

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third of the telecommuters in this pilot phase can work in private offices, with doors, that average 95 square feet in size. Generally, though, the telecommuters' regular offices are more spacious and better equipped than their exchange workplaces.

Finally, not a single one of the TFEP participants expressed a desire to stop.

Participants tend to rate the exchange facility higher than a home office in terms of productivity and ability to do various types of work.

Most say they anticipate continuing to telecommute one or two days a week for the foreseeable future. It's no wonder, then, that 88% of participants rate the TFEP pilot program successful.

For more information, or for a copy of the full report, contact: Walter Siembab, Project Director, (310)645-1129, fax: 310-645-3516. Ask about the Telework Facilities Exchange 1993–1994 Final Report.

New Study Of Impacts On"Distance Workers"

The Institute for the Study of Distributed Work has received a grant from the AT&T Foundation to study the work styles of distance workers, and the impact of this work mode on the workers, as well as their families and communities.

If you feel you are a potential subject for this study, or you know someone who might be, please contact the Institute. All data will be strictly confidential and no individual information will be included in any of the technical papers or reports resulting from the study.

The Institute is seeking people with the following characteristics:

1. They conduct more than 50% of their work activities in a physical location different from their employer's, and at a time of their own choosing.
2. They coordinate and conduct their work activities across national boundaries, that is, they live in one country, their employer's office is located in another.
3. They use telecommunications networks to receive work assignments and send work products.
4. They have engaged in this way of working for more than six months.
5. They are willing to be interviewed by telephone for approximately 30 minutes, or electronically submit a written questionnaire to the Institute.

Anyone who meets these criteria and is willing to participate in this research project should contact: Dr. Charles Grantham, Institute for the Study of Distributed Work, 725 Washington St., #210, Oakland, CA 94607. Phone: (510)834-1485; fax: (510)834-1486; Email: cegrant@well.sf.ca.us or America Online: ISDW.

Participants will receive a free copy of the executive summary of the final report. But as soon as they become available, these results will also be reported here.■

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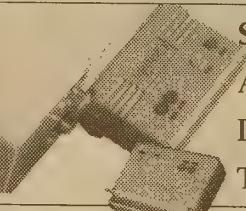

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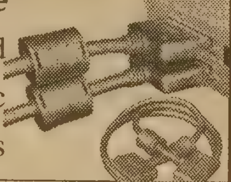

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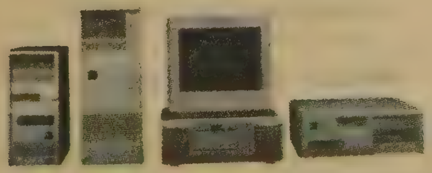

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ACCOUNTING • BY DAVID A. SIMON, CPA AND JENNIFER R. CHERNISS

Sharing A Corporation

Alternative contracting arrangements for technical professionals

Contract programmers, software developers, and other independent technical professionals may benefit by joining together with a colleague or two to form a jointly owned corporation.

Unlike carpooling or computer networking, where the benefits are more obvious, corporate sharing arrangements are undertaken with an eye toward circumventing an array of tax laws and hidden costs that have the effect of discriminating against professionals in the computer industry. A successful corporate sharing arrangement can create tax benefits, enhance your marketability, provide business economies that make you more competitive and profitable, and perhaps supply a companion with whom to commiserate when you accidentally reformat your hard drive.

The Miracle Of Depreciation Life

One potential benefit of joining forces as an IRS-consecrated corporation is in the way the sale of certain technology products are treated for tax purposes.

If you're in the business of developing software and hope to sell the source code outright, a snag in the 1993 Tax Act lessens the market value of software programs developed in the proverbial garage. When a business purchases your source code outright, the buyer generally depreciates it rapidly, over a period of just three years. Under the new rule, if the software rights constitute "a substantial portion" of your business, that three-year depreciation life is stretched out to a painful fifteen years—a potential deal buster because the buyer can't deduct the purchase costs until years later. Your source code would be far less valuable in the market because the buyer's real cost is higher.

Sharing a corporation is one way around this obstacle. By making your business bigger, the software rights you sell become less substantial in proportion. Once you're big enough that the software no longer constitutes a "substantial portion" of your business, you're relatively safe. But if you fail to leap this hurdle, a large corporation theoretically offering identical source code could command a higher price for their product, simply because tax law disfavors small businesses with big source code.

Getting No Respect

Technical professionals seek numerous tax benefits by incorporating. Unfortunately, these benefits face a constant threat of being denied under Section 269A of the Internal Revenue Code. But in real life the bark of this seemingly ominous provision is worse than its tax bite.

> **Is computer programming considered either engineering or consulting? ...neither Congress nor the IRS has definitively answered this obvious question.**

Section 269A gives the IRS authority to reallocate income and deductions between a personal service corporation and its employee-owners, if the corporation "is formed or availed of" principally for tax avoidance purposes. Essentially, the IRS simply pretends the corporation doesn't exist. This rule only applies, however, if substantially all of the corporation's services are performed for only one other entity.

It doesn't take an Einstein CPA to steer clear of this minefield; you simply put two techies in the same corporate boat. Suppose Simpson, a programmer, and Kennedy, a systems consultant, each serve only one (separate) client, working at their respective clients' sites. Since substantially all their services, individually, are performed for one client, the IRS could easily raise the Section 269A issue. But if Simpson and Kennedy create a corporation and have it employ them, that corporation will serve two clients. Assuming that the new corporation does not perform "substantially all" the services for either client, they're off the hook. Having three clients would be even safer.

A word of caution: Passing the Section 269A sandtrap doesn't guarantee entry into the clubhouse. The corporation can't be a "straw," a "dummy," a "sham," or "unreal."

It's usually easy to avoid this scarlet letter. The corporate entity should be respected for tax purposes if it has any business purpose or substantial business activity. This seems to require little more than the observance of bookkeeping formalities and similar nonburdensome practices in executing contracts, maintaining a separate bank account, holding property in the corporate name, and representing the corporation to third parties as an independent organization.

Simpson and Kennedy have little concern because they use a computerized accounting system and visit their attorney for periodic checkups. But if you don't play by the rules, it's anyone's guess as to whether the corporation will be respected for tax purposes.

Incidentally, unincorporated tech professionals doing programming (for example) on an hourly basis should also carefully draft contracts to avoid running amiss of software ownership issues. Even inveterate do-it-yourselfers are well advised to get legal counsel before writing the first line of source code. A clearly written but not-too-technical book addressing ownership issues is *The Software Legal Book*, by Paul S. Hoffman from Shafer Press. (Reviewed in *MicroTimes*, December 1993).

Happy Tax Rates

Although ordinary corporate income tax rates climb as high as 35%, small corporations often enjoy very favorable tax rates—15% on the first $50,000 of taxable income.

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Accounting...*continued*

Subject to limitations, the low rates often make it possible to use small corporations as tax deferral vehicles, sometimes referred to as "incorporated pocketbooks." Unfortunately, a personal service corporation is nowadays subject to the highest corporate income tax rate, currently 35%, on all its income (in addition to possible add-on taxes).

Graduated tax rates, starting at 15%, are unavailable if 1) "substantially all activities" of the corporation are devoted to certain disfavored occupations, which include consulting and engineering, and 2) "substantially all of the stock" is held by employees performing services for the corporation in connection with those engineering or consulting activities.

To take advantage of the graduated rate structure and save big, you'll need to navigate beyond one or both of these Bermuda triangles. Choose your corporate buddy wisely.

To clear the first hazard regarding business activities, you'll need to carefully review the legal guidance on what are considered to be consulting or engineering services. This can be tricky, since the temporary regulations covering the issue recently expired.

Especially unfortunate is the fact that the expired regulations provided some guidance specifically targeted for the computer industry. For example, if your activity consists of commissioned sales, that wouldn't have been considered consulting, even if a high degree of computer expertise was called for.

Is computer programming considered either engineering or consulting? Just about anyone in Silicon Valley would think so. But neither Congress nor the IRS has definitively answered this obvious question. The expired regulations suggest that the IRS does not consider programmers to be engineers or consultants. They provided an example wherein a taxpayer who provides services consisting of determining a client's electronic data processing needs is considered to provide consulting services if no additional programming services are provided "distinct from the recommendations made by the taxpayer with respect to the design and implementation of the client's data processing systems."

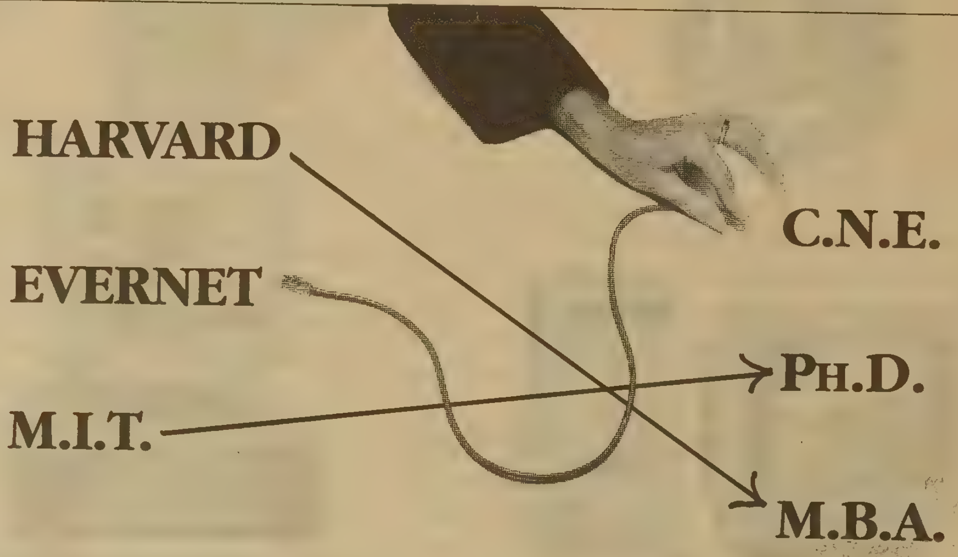
One way to resolve the uncertainty is to request a private letter ruling. If this ruling is favorable (and the IRS isn't obligated to rule), your corporation may be able to accumulate up to $250,000 at income tax rates as low as 15%. And, the corporate umbrella may extend this benefit to a cohort who otherwise couldn't qualify.

If you don't think the activities criteria will let you through, the second category on ownership provides another test. Here's where your buddy comes in handy. The ownership test says that if substantially all of the stock of the corporation is held by employers performing services in the field of engineering, consulting, and certain other categories, those favorable rates will elude you. To outsmart the hazard, arrange the stock holdings so that this test isn't met. Simply arrange for more than an insubstantial amount of stock to be held by a non-engineering, non-consulting pal.

In this way programmers, analysts, and other contract techies are clearly better off than doctors or lawyers. California law requires that all stock of medical or legal professional corporations must be owned by licensed MDs or JDs, dead or alive; trapping them in the ownership snare. No such restriction applies to most contract technical professionals. Any Tom, Dick, or Jane can own stock in a corporation that programs computers.

For more information on personal service

continued on page 173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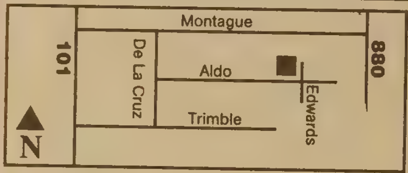

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OS/2 • BY FABIAN PASCAL

OS/2 And Notebooks

Elsewhere I wrote: "On the face of it, there is hardly a more desirable [true] operating system for notebooks than OS/2, even for DOS and Windows applications. OS/2's ability to multitask them as well as its native applications comes in very handy when they are all needed on the road.

"The industry, however, seems oblivious to its potential. Notebook vendors show little interest in or knowledge of whether and how OS/2 runs on their machines, and the press is equally indifferent. Thus, despite the constant progress in portable technology and the rapid proliferation of notebook models, an affordable 'true' notebook that runs OS/2 well is still difficult to find.

"In the absence of any published requirements for OS/2- capable notebooks, let alone product testing and evaluations, selecting a proper machine is difficult and may lead to trouble, because most otherwise desirable notebooks are still not up to the rigors of OS/2."

> Depending on needs, preferences, and resources, some users may be willing to trade some portability for more functionality or vice-versa, and some of either or both for price.

Frustrated by this lack of information, I've developed a set of requirements that can be used to evaluate notebooks for OS/2. There's considerable subjectivity concerning the relative importance of particular criteria. Depending on needs, preferences, and resources, some users may be willing to trade some portability for more functionality or vice-versa, and some of either or both for price. However, as much as possible, a good notebook should minimize, if not obviate, such tradeoffs.

This is not to say that these requirements are the whole story. You need to pay attention to other issues as well when you consider a notebook. For example, I avoid machines that measure more than 8.5" x 11" x 2" and weigh more than 6 lbs. with battery; I prefer angled keyboards with key travel and click, and with a similar layout to my desktop's. With fast processors I pay attention to heat generation. While built-in pointing devices (usually trackballs) reduce clutter for travel, I personally prefer a mouse (a cordless mouse, such as the one made by Logitech, would be nice, particularly if its receiver were built into the notebook; similarly, the AC adapter should be universal and also built into the notebook.

This column expounds the OS/2 requirements and uses them, as well as some OS/2 performance tests, to evaluate a notebook by Cypress Computer.

OS/2 Requirements

The recommended characteristics of notebooks for OS/2 are listed in the first column of Table 1.

CPU: Do not get less than a 486 processor, the faster the better (tripled clock speed preferable), 100MHz is best (Pentium machines are starting to appear and there are even PowerPC prototypes). An external cache of at least 128K is desirable; a floating point coprocessor should be avoided if no heavy numeric calculations are performed, but is recommended for spreadsheet or statistical analysis. A low-consumption CPU (e.g. 3.3V 486) is recommended to extend battery life.

Bus: A fast, 32-bit data path is desirable for OS/2. The industry seems to be headed in the PCI direction, but notebooks are still ISA-based and, if so, they should at least support VLB (VESA local bus) for video. PCMCIA slots are recommended.

For modems and network or PCMCIA-to-SCSI adapters Type II slots should do. Type III slots are desirable if you need to exchange large amounts of data and find Bernoulli cartridges or tapes too bulky (the thicker Type III storage cards are not a substitute for the regular hard drives).

Most important: Make sure that the machine and/or any of the PCMCIA cards you get are either compatible with IBM OS/2's Card and Socket Services driver with EasyPlay (that is, hot-swap) capability, or with an equivalent, working OS/2 driver of their own.

Memory: The more memory you throw at OS/2, the more applications you can multitask and the better the performance you'll enjoy. sixteen megabytes should be the standard notebook configuration for OS/2, with expandability to at least 32MB, preferably in small increments (availability of memory upgrades from third-party vendors and user-installability are desirable). seventy nanoseconds or faster memory is recommended.

Video: In windowed multitasking environments like OS/2 the small screens of notebooks can be an annoyance, if not a real impediment. The current technology hovers around a 10" diagonal, and screens smaller than that should be avoided.

You may get away with a display resolution of 1024 x 768, but 800 x 600 is more likely. To take advantage of it, however, the notebook's video adapter must come with an OS/2 driver that supports SVGA resolutions. At least 1MB worth of video RAM is recommended for performance.

There is a tradeoff among color, battery life, and price. A monochrome machine with 64 shades of grey and a port for an external SVGA color monitor (to which a high-resolution LCD panel could be

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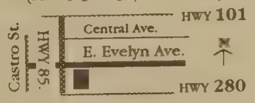

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By: K LOK

OS/2 *continued ...*

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Table 1: OS/2 Requirements and Cypress

	Recommended	Cypress
CPU:	486/DX4	Y
	100MHz	Y
	128K cache	Y
	3.3V	Y (Intel SL)
	(math coprocessor)	Y (available)
Bus	PCI or	
	ISA+VLB	Y
PCMCIA	=> II (III)	Y II,III
	=> 2 slots	Y
	EasyPlay	?
Memory	16MBstandard	4MB
	=> 32MB exp.	36MB
	incr. upgrades	Y (8-12-16/20-36)
	=< 70ns	70ns
Video	=> 10" screen	9.5" (10" color)
	(detachable LCD)	N
	SVGA driver	N
	monochrome/64	Y
	(color)	Y (dual scan/activematrix)
	=> 1MB VRAM	1MB
	ext. SVGA port	Y?
Storage	=> 200MB	250/340/540
	=< 10ms avg. access time	10/10/10
	> 5MB/sec xfr rate	8.3MB/sec
	internal floppy	Y
Power	lithium ion or	
	metal hydride battery	Y
	spare standard	Y
	=> 3hrs mono	2hrs (hot swap)
	intelligent power mgmt	N
	resume mode	N
	universal AC (built-in)	Y (N)

attached for presentations) is not a bad idea. Ideally, the screen should be detachable and double as an LCD panel.

Storage: A hard disk smaller than 200MB is not recommended, not only because OS/2 programs and files tend to be large, but also because you may want to partition the drive, and the HPFS performance advantage starts at 100MB.

While many notebooks have removable hard drives, note very carefully that OS/2 cannot boot from a removable drive, so even removable drives must be treated as fixed and, thus, cannot be swapped. Consequently, even with a larger than 200MB drive you may end up needing access to additional storage space, if nothing else, for safe backups. (If both the notebook and your desktop support SCSI, you can conveniently share a SCSI drive. Otherwise, it is likely you will want a PCMCIA-to-SCSI adapter, or a non-SCSI parallel port drive, in which case make sure that either works under OS/2). For good performance avoid average access times higher than 10ms, and transfer rates lower than 5MB/sec (remember: OS/2 may swap memory to disk).

Power: OS/2 puts a heavy load on the battery, particularly when it swaps to disk. Consequently, longer-life lithium-ion or at least metal hydride batteries are preferable. A battery should provide at least three hours of OS/2 work in monochrome mode, and a spare battery should be standard (two for color).

Machines which accept two batteries offer the "hot swap" capability: you can

continued on page 168

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- 8K Internal Cache
- Shadow RAM

Landmark speed: 220/111

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Complete Systems

- Pentium Ready
- 4MB RAM exp to 32MB
- 8K Internal Cache
- Shadow RAM

Landmark speed: 220/111

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486SX 128K
SX-33/ SX-25
Complete Systems

- 4MB RAM exp to 32MB
- 8K Internal Cache
- Shadow RAM

Landmark speed: 111/90

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386DX 128K
40/ 33
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Landmark speed: 65/55

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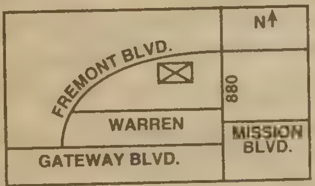

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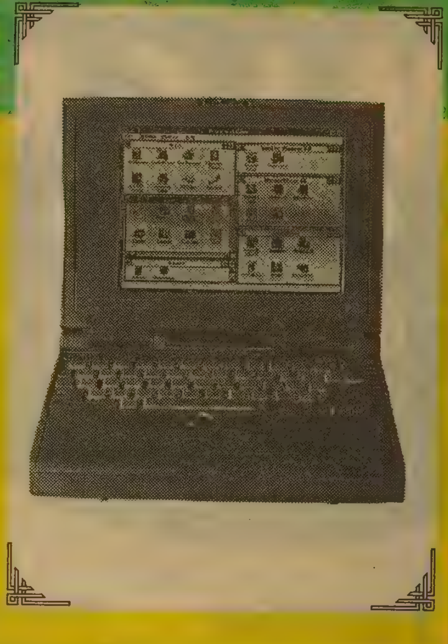

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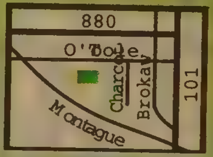

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INTERNET • BY JOHN S. QUARTERMAN AND SMOOT CARL-MITCHELL

What Is The Internet, Anyway?

This column almost always mentions the Internet, and in the press you read about the Internet as the prototype of the Information Highway; as a research tool; as open for business; as not ready for prime time; as a place your children might communicate with (pick one) a. strangers, b. teachers, c. pornographers, d. other children, e. their parents; as bigger than Poland; as smaller than Chicago; as a place to surf; as the biggest hype since Woodstock; as a competitive business tool; as the newest thing since sliced bread.

A recent *New York Times* article quoting one of us as to the current size of the Internet has particularly stirred up quite a ruckus. The exact figures attributed to John in the article are not the ones we recommended for such use, but the gist of the article was correct in saying that we don't believe the Internet is as big as many other estimates have said. Our estimates are based on several sources of information, including a survey of most of the organizations on the Internet.

Succeeding discussion has shown that many people want to believe the Internet is very large. Some want to believe it so much that they want to count computers and people that are probably *going to be* connected some time in the future, even if they are not actually connected now.

Many people want to believe the Internet is very large. Some want to believe it so much that they want to count computers and people that are probably *going to be* connected some time in the future, even if they are not actually connected now.

We prefer to talk about who is actually on the Internet and on other networks now. We'll get back to the sizes of the various networks in another article. For now, let's discuss a more basic issue that's at the heart of much confusion and contention about sizes: What is the Internet, anyway?

Starting At The Center

For real confusion, start trying to get agreement on what is part of the Internet: NSFNET? CIX? Your company's internal network? Prodigy? FidoNet? The mainframe in accounting?

Some people would include all of the above, and perhaps even consider excluding anything politically incorrect. Others have cast doubts on each of the above.

Let's start someplace that almost everyone would agree is on the Internet. Take RIPE, for example. The acronym stands for European IP Networks. RIPE is a coordinating group for IP networking in Europe. (IP is the Internet protocol, which is the basis of the Internet. IP has a suite of associated protocols, including the Transmission Control Protocol, or TCP; the name IP, or sometimes TCP/IP, is often used to refer to the whole protocol suite.) RIPE's computers are physically located in Amsterdam. Its important feature, for our purposes, is that you can reach RIPE (usually by using its domain, ripe.net) from just about anywhere anyone would agree is on the Internet.

Reach it with what? Well, just about any service anyone would agree is related to the Internet. RIPE has a WWW (World Wide Web) server, a Gopher server, and an anonymous FTP server. So they provide documents and other resources by hypertext, menu browsing, and file retrieval. Their personnel use client programs such as Mosaic and Lynx to access other people's servers, too, so RIPE is both a distributor and a consumer of resources via WWW, Gopher, and FTP. They support TELNET interfaces to some of their services, and of course they can TELNET out and log in remotely anywhere they have personal login accounts, or where someone else has an anonymous TELNET service, such as a library catalog, available. They also have electronic mail, they run some mailing lists, and some of their people read and post news articles to USENET newsgroups.

WWW, Gopher, FTP, TELNET, mail, lists, and news: that's a pretty characteristic set of major Internet services. There are many more obscure Internet services, but it's pretty safe to say that an organization like RIPE that is reachable with all these services is on the Internet.

Reachable from where? Russia first connected to the Internet in 1992. For a while it was reachable from networks in the Commercial Internet Exchange (CIX) and from various other networks, but not from NSFNET, the US National Science Foundation network. At the time, some people considered NSFNET so important that they didn't count Russia as reachable because it wasn't accessible through NSFNET. Since there are now several other backbone networks in the US as fast (T3 or 45Mbps) as NSFNET, and routing through NSFNET isn't very restricted anymore, few people would make that distinction anymore. Besides, the Internet connects more than eighty countries, and Russia is now adding hosts to the Internet faster than almost any other country. So for the moment let's just say reachable through NSFNET or CIX networks, and get back to services.

Looking At Firewalls

A network that is owned and operated by a company in support of its own operations is called an enterprise network. One that uses the Internet Protocol (IP) is an enterprise IP network. Many of these are integrated into the Internet like any other IP network. However, many are deliberately firewalled so that their users can get to servers like those at ripe.net, but nobody outside the company network can get to company hosts. A user of such a network can thus use WWW, Gopher, FTP, and TELNET, but cannot supply resources through these protocols to people outside the company.

For purposes of this distinction between suppliers and consumers, it doesn't matter whether the hosts behind the firewall access servers beyond the firewall from their own IP addresses, or whether they use proxy application gateways (such as SOCKS) at the firewall. In either case, they can use outside services, but cannot supply them.

So for services such as WWW, Gopher, FTP, and TELNET, we can draw a useful distinction between supplier or distributor computers, such as those at ripe.net, and consumer computers, such as those inside firewalled enterprise IP networks. It

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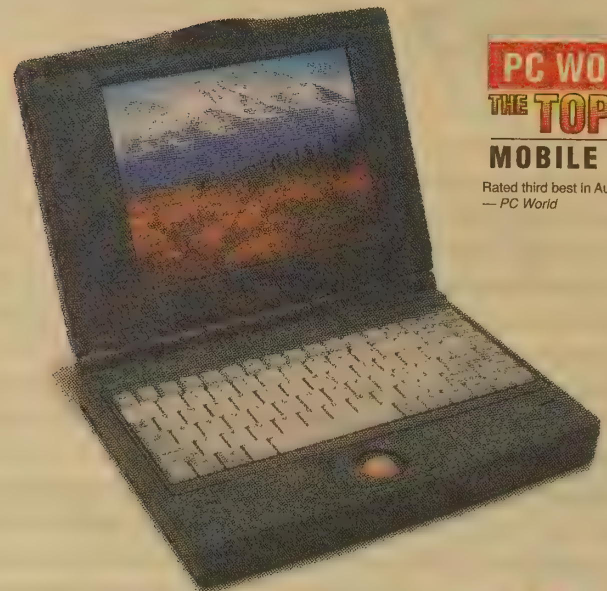

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Internet...

might seem more obvious to say producer computers and consumer computers, since those would be more clearly paired terms. However, the information distributed by a supplier computer isn't necessarily produced on that computer, or within its parent organization. In fact, most of the information on the bigger FTP archive servers is produced elsewhere. So we choose to say distributors and consumers. Stores and shoppers would work about as well, if you prefer.

Even more useful may be a distinction between supplier-capable computers (not firewalled) and consumer-capable computers (firewalled). A computer that is not supplying information right now may be capable of doing so as soon as someone puts information on it and tells the machine to start supplying that information. That is, setting up a WWW, Gopher, or FTP server isn't very difficult; much less difficult than getting corporate permission to breach a firewall. Similarly, a computer may not be able to retrieve resources by WWW or Gopher at the moment, since client programs for those services usually don't come with the computer or its basic software, but almost any computer can be made capable of doing so by adding some software. In both cases, once you've got the basic IP network connection, adding capabilities for specific services is relatively easy.

The Core Internet And The Consumer Internet

Let's call the non-firewalled computers the core Internet, and the core plus the consumer-capable computers the consumer Internet. Some people have referred to these two categories as the Backbone Internet and the Internet Web. We find people often confuse "Backbone" with NSFNET or some other specific IP network, and people often confuse "Web" with the World Wide Web (WWW) protocol, so we prefer core Internet and consumer Internet.

The core Internet is readily discernible technically as all the hosts that are reachable with ICMP ECHO (ping). The consumer Internet is harder to see because many of its hosts are behind firewalls.

It's true that many companies with firewalls have one or two computers carefully placed at the firewall so that they can serve resources. Company employees may be able to place resources on these servers, but they can't serve resources directly from their own computers. It's rather like having to reserve space on a single company delivery truck, instead of owning one yourself. If you're talking about companies, yes, the company is thus fully on the core Internet, yet its users aren't as fully on the Internet as users not behind a firewall.

If you're just interested in computers that can distribute information (maybe you're selling server software), that's a much smaller Internet than if you're interested in all the computers that can retrieve such information for their users (maybe you have information you want to distribute).

A few years ago it probably wouldn't have been hard to get agreement that firewalled company networks were a different kind of thing than the Internet itself. Nowadays, firewalls have become so popular that it's hard to find an enterprise IP network that is not firewalled, and the total number of hosts on such consumer-capable networks is probably almost as large as

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the number on the supplier-capable core of the Internet. Hence many people now like to include these consumer-capable networks along with the supplier-capable core when discussing the Internet.

Mail, Lists, And News

But what about mail, lists, and news? Almost all the firewalled networks do let these communications services in and out, because they are batch, asynchronous, and store-and-forward. Composing a message and delivering it are two separate processes. Further, mail doesn't even necessarily go to its final destination in one hop; repeated storing at an intermediate destination followed by forwarding to another computer is common, thus the term store-and-forward. USENET news uses somewhat different delivery mechanisms, but ones that are also typically batch, asynchronous, and store-and-forward.

Because it is delivered in this manner, a mail message or a news article is much less likely to be a security problem than a TELNET, FTP, Gopher, or WWW connection. This is why firewalls usually pass mail, lists, and news in both directions, but usually stop incoming connections of those interactive protocols. There are interactive communication services, such as IRC and talk, and those are usually firewalled just like other interactive protocols.

Because WWW, Gopher, TELNET, and FTP are basically interactive, you need IP or something like it to support them. Because mail, lists, and news are asynchronous, you can support them with protocols that are not interactive, such as UUCP and FidoNet. In fact, there are whole networks that do just that, including UUCP and FidoNet, among others. Because these networks are not interactive, they are not capable of supporting TELNET, FTP, Gopher, or WWW. We don't consider them part of the Internet, since they lack the most distinctive and characteristic services of the Internet.

Some people argue that networks such as FidoNet and UUCP should also be counted as being part of the Internet, since electronic mail is the most-used service even on the core, supplier-capable Internet. They further argue that the biggest benefit of the Internet is the community of discussion it supports, and mail is enough to join that.

Well, if mail is enough to be on the Internet, why is the Internet drawing such attention from press and new users alike? Mail has been carried across distributed computer networks since 1972 or 1973, but that's not what has made such an impression on the public. What has, are the interactive services and interfaces to them such as Mosaic; such interactive services have always distinguished the Internet from asynchronous networks such as FidoNet and UUCP. Besides, if being part of a community of discussion was enough, we would have to also include anyone with a fax machine or a telephone. Recent events have demonstrated that

continued on page 206

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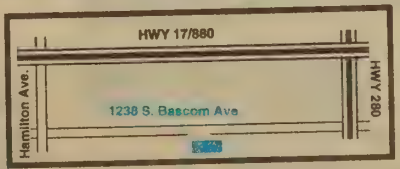

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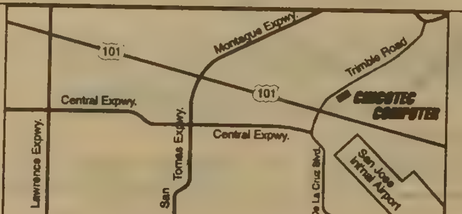

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BMUG

Stress And Fun In Boston

By David Morgenstern

This month you get a BMUG view of the annual East Coast Macintosh love fest—the Macworld Expo in Boston. It's a chance for users to see the offerings from small developers who either don't have the dough to take out high-cost splashy ads in Mac monthlies, or haven't figured anything out beyond getting the product finished.

Keeping up with local Boston BMUGers celebrating the arrival of the Expo season can be a strain. Unlike the currently temperate climate found around the San Francisco Bay Area for both weather and for the consumption of alcoholic beverages, Boston is a hot and humid place. And the natives are proud of the city's fine brewing tradition. The combination of a walking-the-Expo-floor thirst and the extraordinary high level of BMUGer hospitality is a natural combination that inevitably resulted in a trip to a pub. One thing led to another. And another. Burp... Onwards!

Take My Macworld, Please!

If there's a show that's in need of a makeover, it's the Boston Macworld Expo. It's suffering from a host of incompatible physical and industry trends that stress the poor greater-Boston area Mac users.

The worst aspect is the layout of the show. It's held in two main halls, the Bayside and World Trade Centers, about a twenty-to twenty-five-minute bus ride from each other. In addition to the pair of large halls, there are a few other Expo attractions: the Apple Pavilion, situated across the street from the WTC, and several hotel ballrooms for conference and keynote addresses. It's plenty of fun to shmooze with seat-mates on the bus, but it makes it almost impossible to see the whole show in a single day.

The Apple Pavilion was a big white tent in the parking lot, with the air conditioner

continued on page 294

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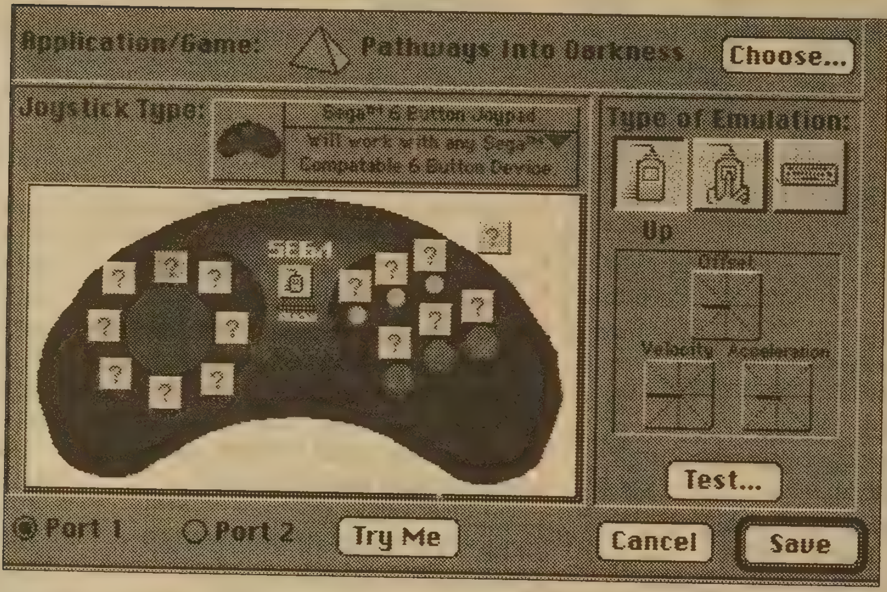
running overtime. The fire marshal (or whatever they call the office in Beantown) limited the number of people that could be packed inside, so attendees had to stand in a line that snaked around the block. In the sweltering heat. Hey, I'd walk a mile for my System 7.5.

Mitch Hall Associates, the company that runs the show, appears to be trying to change the direction of Expo. Instead of being held on at least one weekend day, the show ran from Tuesday to Friday. This really cuts out SOHO (small office, home office) users and families from attending, and everyone thought that the crowds were down. I was told by a vendor that management wanted to "keep out the kids," and raised the single-day, at-the-door price to $40 and cash only.



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The buttons on a game controller can be programmed for any key combinations in ChoiceStick Control Panel.

Some say Mitch Hall is attempting to rework the Expo into a high-priced kinda industry show, with monster-sized booths and low-key demonstrations. Unfortunately, the networking and video industries already have their own shows. Of course, the rumored policy will not be welcome news to the many vendors who think the Macworld Expo is a selling show!

Half a dozen exhibitors got an up-close and personal view of a side of Boston that they would rather have avoided—a business meeting with the Boston police department! At least six booths, including FWB, ATTO, and Wacom had Power Macintosh systems stolen right out of the booths.

SofTeam USA, a company that sells specialty plotter drivers that are developed in Italy for sign-cutters and embroidery machines, also had a computer stolen. Unfortunately, stuck on the back of the Mac were all of the hardware security-keys, also called "dongles," that the software needs to operate. Yet another strike against hardware keys. Even if SofTeam had rented another machine, they would have had to wait for a dongle to be rush shipped to the show floor. Luckily for the company, their Mac, with dongles still attached, was found hidden in another part of the hall by a vendor.

BMUG had booths in both halls, and they featured our new $20 TV-ROM Too Update CD-ROM. The Update has digital video examples that detail the new features found in QuickTime 2.0., such as bigger movies and "burnt text" that sticks with defined frames and action. The disc includes a copy of QuickTime 2.0, which additionally now smoothes out movies during playback.

My favorite demo is of the MIDI (musical instrument digital interface) capabilities now integrated into QuickTime. The clip shows BMUGer musician Stefan B. Lipson playing the sYbil, real-time MIDI controller software for drum pads by G.H.S. Corporation of Battle Creek, Mich. You can hear Stefan's music (sYbil lets a MIDI-ized drummer play scales, chords and anything) as it was recorded during the performance by the video camera's microphone, or the actual MIDI data simultaneously generated. It's then played with software musical instruments now supported in QuickTime 2.0. Very cool!

The Update disc is available from the BMUG office for $20 (and $4 S&H).

Boston Baked Bytes

Here are some of the best of the bunch found on the Expo floor:

- Since I favor hardware hacks, my favorite device was the **ChoiceStick by Kernel Productions.** It's an ADB (Apple Desktop Bus) to Sega Genesis interface box, so you can plug in a couple of old joysticks or other game controllers. With the special extender, the box will support four devices! It will be available in October or November for around $65, the developer said.

What is this good for, you ask? There are a bunch of shareware arcade-type games that support two or more players. They are a lot of fun and perfect for joysticks.

ChoiceStick also is pushing the box for some non-game applications. The input devices can help give some options for disabled users, since some controllers have scads of very large buttons, which can be more easily triggered by users with fine motor control difficulties. There are a couple of infrared wireless handheld models that can be used for business presentations. Specialty wireless and disability keyboards are rather expensive, and the low cost of both the game controllers and the interface converter box will be attractive to lots of users.

As you can see in the illustration, the company has really done a job on the control panel interface for the box. Each button can be assigned either a key combination, or a mouse movement that tracks velocity, acceleration, and x/y coordinates!

- **Pictor GraFX's $39.95 Pointillist** package lets users create and view stereograms, those maddeningly blurry pictures that draw a crowd whenever they're shown in a shop window. I've always thought that the images are great self-esteem builders for people with terrible vision. I see them clearly and quickly, so you can guess the condition of my eyesight.

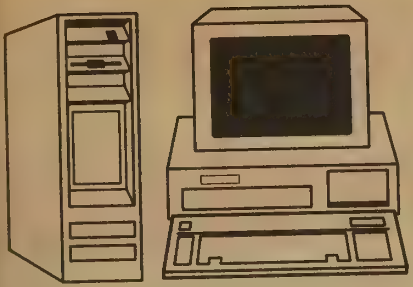
Users can create color, black and white, and grayscale stereograms with the SuperDots application. The picture can be made with repeating tiles of small images, or from combinations of scanned photos or drawings. The program lets users control the level of depth in the picture so that objects can have the correct 3-D shape. Borders and transparent effects can also be laid over an image.

Also included with the package are a viewer application and GraFX Stereograms, a pair of standalone and After Dark-compatible screen savers. Elements in the stereograms can be animated, and a bundle of the screen savers and viewer is available separately for $14.95.

- Several Japanese CD-ROM publishers had found US distributors and had booths at the Expo. I remember seeing some of the exhibitors when visiting the Macworld Expo in Tokyo last year.

The CD titles from Japan have much different content from the games and databases we're used to here in the States. Their CDs tend to focus on the CD-ROM as an alternative to high-priced, glossy-paper, coffeetable books. They often feature evocative images and beautifully done animation, but without a highlydirected game situation. Users are often invited to play and click on different elements in a picture; however, the "point" is

continued on page 89



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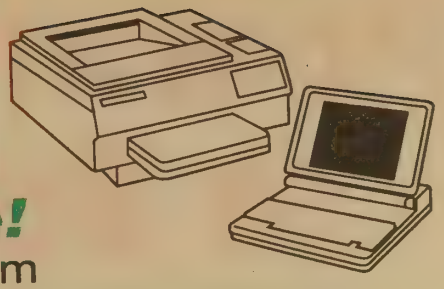

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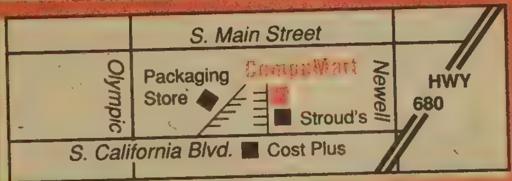

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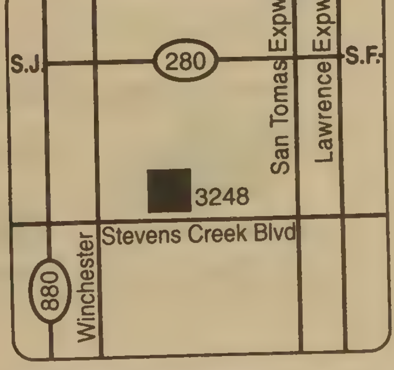

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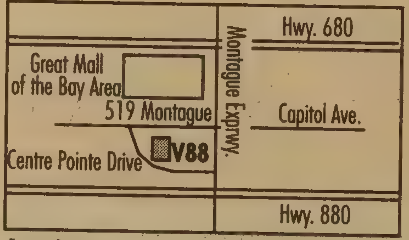

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pure exploration and artistic intent, not to win or run up a big score.

Synergy Inc. showed the works of **Naruhiko Sono**, the "director" of **Alice** and **Gadget**. Alice is based on *Alice in Wonderland*, and Gadget lets users uncover various plots and science-fiction elements on a train-ride. Gadget uses QuickTime film clips and has an original musical score. It has a list price of $79.95.

Additionally, the company has a series of CDs that show photographs by Japanese artists and a new title showing the work of Diane Wesson. Unlike most photographic CDs that give users the ability to use the images, the intent of the Synergy title is only for viewing.

Another Japanese CD-ROM with lots of atmosphere is **Biomorph Encyclopedia Muybridge from Fourth Dimension of Tokyo** and distributed in the US by UEP System. The $60 work takes events from the life of Eadweard Muybridge, a nineteenth century British photographer who did some time-motion studies. It morphs people and animal pictures for lots of spooky and moody effects.

- If you're into flight simulation games, you should check out the new **ADB controller combos from ThrustMaster.** The company has three different systems that can all be used together: a $149.95 foot-pedal **Rudder Control System**, a six-button $99.95 **Weapons Control System**, and a $149.95 **Flight Control System.**

The weapons controller has a three-way rocker switch and is supposedly based on a military design. The flight controller is the more familiar stick design with a trigger. All of the buttons are programmable, according to ThrustMaster.

The Name Game

If you were hiding out in the far reaches of outer or inner space in August, you may not have heard the news that rock-music deity Bob Dylan sued Apple Computer over a forthcoming CD-ROM named Dylan. Dylan is short for DYnamic LANguage, a Lisp-like programming language, and Apple is implementing a version. Perhaps Bob thought that only he should be able to Dylan-ize a compact disc!

Most people think that Apple and the language developers on the East Coast did not have Bob Dylan in mind at any time. A version of Dylan is called "Thomas," after the poet, and another environment at Cambridge is called Gwydion, after a mythological Welsh wizard with a son named — Dylan.

Apple has always had trouble with names. Years ago, Apple, the Beatles' company, twice sued Apple Computer when Macs began to incorporate MIDI musical abilities. The standard synthesized System sound Sosumi is actually "so sue me" from those days. The British Apple finally came away with a reported $24 million settlement.

Carl Sagan, the astronomer, beat Apple up over using his moniker as an internal code name for one of the first Power Macintosh models. The Apple developers were not pleased with this and reportedly changed the name to BHA, or "Butt-Head Astronomer." Heh-heh.

Bytes And Pieces

- If you're having some trouble with your Apple StyleWriter II inkjet printer, you may

WHAT IS BMUG?

BMUG is an educational, nonprofit, consumer advocacy group organized to share information and provide critical direction to users and developers in the computer community worldwide. It is an independent advocate, not affiliated with any manufacturer, delivering trustworthy information and useful products.

Like any growing organization, it is many different things to its fifteen thousand international members. BMUG supports many special interest groups (SIGs), 18-line Planet BMUG and 11-line BMUG Boston BBSes, a software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 500+ page book that we call our "newsletter."

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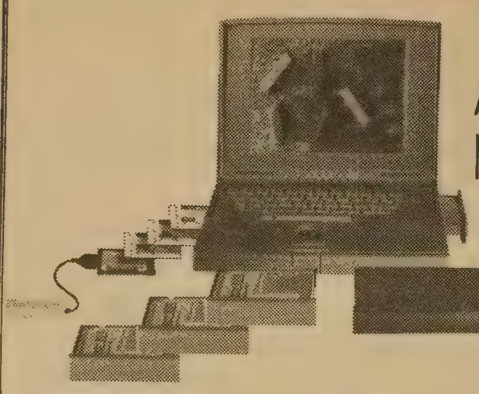

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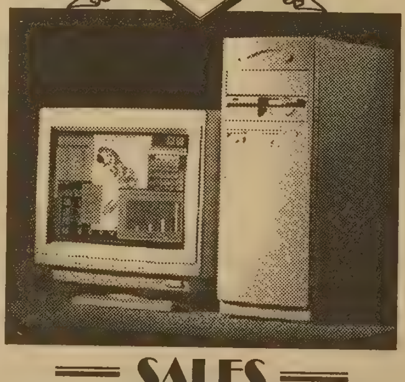

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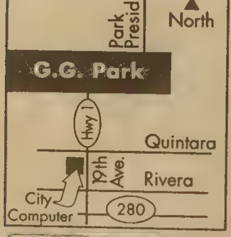

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The story incorporates color illustrations, spoken phrases, personalization, and lots more. It's also available from the BMUG office. ■

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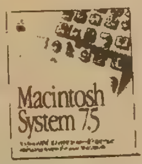

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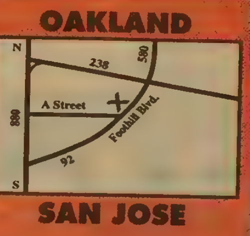

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Memory Managers

By Woody Liswood

Just How Good Is Microsoft's Memmaker Compared To Other Memory Manager Programs?

With the standard 640K of memory available under MS-DOS you need to load not only DOS but any device drivers and TSRs (terminate and stay resident) you may use. Nowadays, this same memory is used to keep track of the resources Windows will use. Given this situation, it is no wonder why, even with 8MB of Windows memory, your system will still ask you to quit one program to be able to run another.

One solution to this is a memory manager program. This program does what its name implies—manages the memory in your computer, both DOS memory and extended memory, that memory above the 1MB DOS limit. It works by gathering together DOS-based device drivers and other TSRs and loading them into extended memory. The goal is to give you as much DOS memory as possible.

Although MS-DOS 6.x comes with a memory manager, Memmaker, just how good is Microsoft's memory manager compared to the commercial programs available?

Although most MS-DOS 6.x users do seem to be using Memmaker, I decided to test it against four of its top competitors: Quarterdeck's QEMM, V Communications' Memory Commander, Qualitas's 386MAX, and Helix Software's Netroom. The criteria I was looking at were ease of installation, crashes or similar problems, and the level of low-end memory available with each program.

I used the MS-DOS "MEM" command to gauge the status of memory. The important measurements are the amount of total DOS memory created under 1MB and the amount of free memory for running Windows.

My current test system is built around a Biostar motherboard, 66MHz 486DX2 with 20MB of RAM. For this particular test, I was running a Hercules VL BUS video accelerator card, a sIDE high-speed IDE card, Sound Galaxy sound board, Future Domain SCSI card with a Sony 6211 CD-ROM, and a Umax scanner daisy chained. There was also a Maxtor 345MB hard drive, an IOMEGA 250 tape drive, a VOMAX 2000 fax modem, and an ITAK trackball. Just about everything uses a device driver or TSR.

Everything is set up to run under Windows with Central Point Tools v2.0 as the desktop manager. My basic set of software includes Lotus SmartSuite, a couple of communications programs, and a wide variety of utilities. Typically, there are at least three programs active at any given time, and when busy this may go up to five or six programs. The one main DOS program I still use is ABRA, a Human Resource Information System, which still requires expanded memory rather than extended memory.

> Netroom gave me the most memory with the least problems, is menu driven, and configures itself automatically.

For my money, Netroom, from Helix Software, won. It gave me the most memory with the least problems, is menu driven, and configures itself automatically. Netroom's technical support was very responsive to calls and their CompuServe sysop returned messages within a day. Netroom uses a technology Helix calls Cloaking to allow many DOS-based TSRs to run in extended memory and free up a major amount of low-end DOS memory. With my particular configuration I experienced only one significant problem with Netroom, which is discussed below.

While in the final stages of my testing, Helix introduced a new product called Multimedia Cloaking, which loads the multimedia drivers for the CD-ROM under its cloaking technology. Thus, late in the game I added another choice to the list, which also gave the best results overall.

Next I tried Memory Commander, which was the easiest program to use. Unfortunately, with 20MB of RAM, Windows would not run. (Windows did run fine with 16MB of RAM.) Because of this problem I decided to leave Memory Commander off the chart.

QEMM was my old standby. I've used different versions of it for a long time. For this comparison I used the latest version, 7.03. It worked, had few problems, and gave the next best results in this test. I did, however, have to fool around with the Stealth switches to get everything to work smoothly. This is not a big deal, but required more time testing different settings than Netroom with its customization routines. QEMM doesn't have the problems with my Hercules board that Netroom does and I could find no good reason not to use it.

The other commercial memory manager program I looked at was 386MAX. I installed it and it worked fine. On the plus side, from my brief testing, I noticed no problems. However, it tested near the bottom of the list.

Memmaker worked as advertised. It does give more memory than MS-DOS by itself, but is at the bottom of the list for these memory manager programs.

The problem with Netroom that I mentioned earlier concerned its cloaking technology. This technology lets you cloak the BIOS, the display BIOS, and almost everything else that you normally would load. Since my motherboard automatically shadows the BIOS, I don't need to cloak the BIOS again. But more importantly, when I cloaked the Video BIOS everything worked great, except when I left Windows to DOS my video display turned into garbage. Under DOS, I had to reboot the computer to get my display back. If I ran the DOS program under Windows, everything worked fine. If you have a similar setup, and move between Windows and DOS, you may not like Netroom. ■

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Memory Manager	Total DOS memory	Free DOS memory
Multimedia Cloaking	911	689
Netroom	879	668
QEMM	805	597
386MAX	768	550
Memmaker	723	530
DOS	640	394

The status of total and free memory below 1MB under DOS displayed by the MEM command in MS-DOS.

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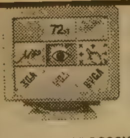

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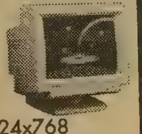

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Cirrus Logic 5426/5428 VLB 1MB	80/80
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Ultra Pro VRAM 1MB/2MB	265/289
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9GXL L-25F 3MB ISA	1259
9GXL L-10 1MB ISA/VLB	249/249
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9GXL L-12 3MB ISA/VLB	395/405
9GXL L-14 4MB ISA	595
9GXL L-16 4MB VLB	895
Orchid	
Celsius VLB VRAM 1MB/2MB	124/178
Fahrenheit 1280 Plus ISA 1MB	128
Fahrenheit 1280 Plus VLB 1MB/2MB	133/195
Fahrenheit 1280 VA or VA/VLB 1MB/2MB	175/205
Kelvin 64 1MB/2MB PCI/VLB	135/182
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Spider VLB DRAM 1MB/2MB	95/145
Spider VLB Plus DRAM 1MB/2MB	115/165
Black Widow VLB VRAM 1MB/2MB	169/239
Hercules	
Graphite VRAM 2MB ISA/VLB	329/329
Dynamite DRAM 1MB/2MB ISA/VLB	189/259

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14" MONO/VGA MONO Monitor	$79/85
14" SVGA MONITOR INT .28/.39	190/180
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F550iw (17" 1280x1024 .28 75Hz)	925
F560iw (17" 1280x1024 .26 TRIN.)	1159
T660i (20" 1280x1024 .31 72Hz)	1995
F7601W (21" 1280x1024 .31)	1885
NEC	
3FGe (15" 1024x768 .28 NI)	549
4FGe (15" 1024x768 .28 NI)	620
5FGe (17" 1024x768 .28 NI)	949
5FGp (17" 1280x1024 .28 NI)	1075
6FGp (21" 1280x1024 .28)	1945
SONY	
17SE1 (17" 1600x1280 .25 NI)	948
VIEWSONIC	
V6E (14" 1024x768 .25 NI)	276
V15EX (15" 1024x768 .28 NI)	369
V15 (15" 1280x.1024 .28 NI)	439
V17 (17" 1600x.1280 .28 NI)	899
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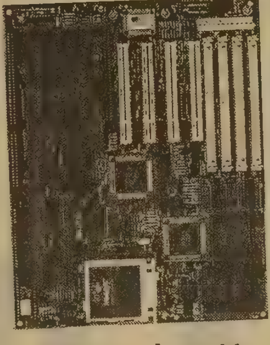
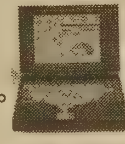
Introducing the LYNX 486 VESA/PCI Local BUS mainboard

(Motherboards Designed and Manufactured in the U.S.A.)



OEM and ODM Inquires Welcome.

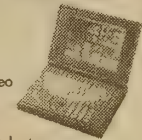
	486VI	486V2	4GPV4 (Green-A)	4GVIP4 (Green-B)
Chipset	Contaq	Contaq	Contaq	Contaq
BIOS	AMI	AMI	Award/AMI (Flash BIOS Optional)	AMI (Flash BIOS Optional)
Energy Green	NO	NO	YES	YES
Processors (SX/DX/DX2)	All Intel/AMD Cyrix (M7 series)	All Intel/AMD Cyrix (M7 series)	All Intel/AMD Cyrix (M7 series)	All Intel/AMD Cyrix (M7 series) **INTEL DX4-100**
Max. Memory	128MB (30 pins)	128MB (30 pins)	128MB (30 pins)	128K **(72 pins)**
Max. Cache	256K	256K	1MB	1MB
Expansion Slots	2 VESA BUS 6-32 bits ISA BUS	2 VESA BUS 6-162 bits ISA BUS	3 VESA BUS 5-16 bits ISA BUS	**3 PCI BUS** **1 PCI/ISA BUS** 2 VESA BUS 3-16 bits ISA BUS
CPU Socket	Standard	Ziff (overdrive)	Ziff (overdrive)	Ziff (overdrive)
Bus Master	2 Slots	2 Slots	3 Slots	6 Slots
Dimension	8.7" X11"	8.7" X11"	8.7" X11"	8.7" X11"
Sale Price 256K Cache	$118	$128	$138	$180



GeoBook 300 Notebook

- 486SX-33MHz Upgradable to DX/DX4)
- 4MB RAM (Max. 20MB)
- 1.44MB Floppy Drive
- 120MB Hard Drive
- 9.5" VESA Local Bus Video
- Built-in PCMCIA drive
- Built-in 16mm Trackball
- Built-in 12 Num Key Pad
- NiCad Battery, AC/DC Adapter

Monochrome	$1355
STN Dual Scan Color	$1910
TFT Active Color	$2910

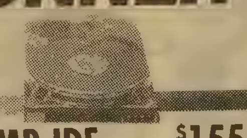


Gallop C6000 Notebook

- 486SLC2/50MHz CPU
- 4MB RAM
- 1.44MB Floppy Drive
- 120MB Hard Drive
- 9.5" VESA Local Bus Video
- Built-in SCSI Interface
- Built-in 16mm Trackball
- Built-in 12 Num Key Pad
- NiCad Battery, AC/DC Adapter

Monochrome	$1245
STN Dual Scan Color	$1790

CONNER



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w/BitFax & BitCom (Win)	Pocket $88

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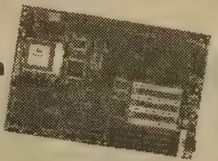

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BUS: 4 PCI Bus Master. 2 VESA Local Bus & 5-16Bit ISA Slots
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CPU Socket: Ziff Socket

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16MB 70ns (72 PINS)	$488

CACHE MEMORY

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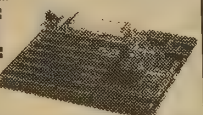
32X8 15ns	$6

IBM



486SLC2-50 ISA with CPU	$136
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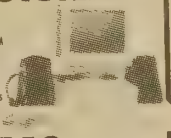
DX4-100MHZ POWER SYSTEM



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Mini/Med Tower case w/230W PS	$37/56
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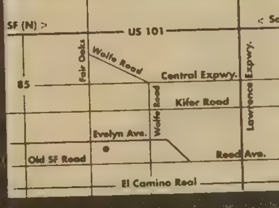

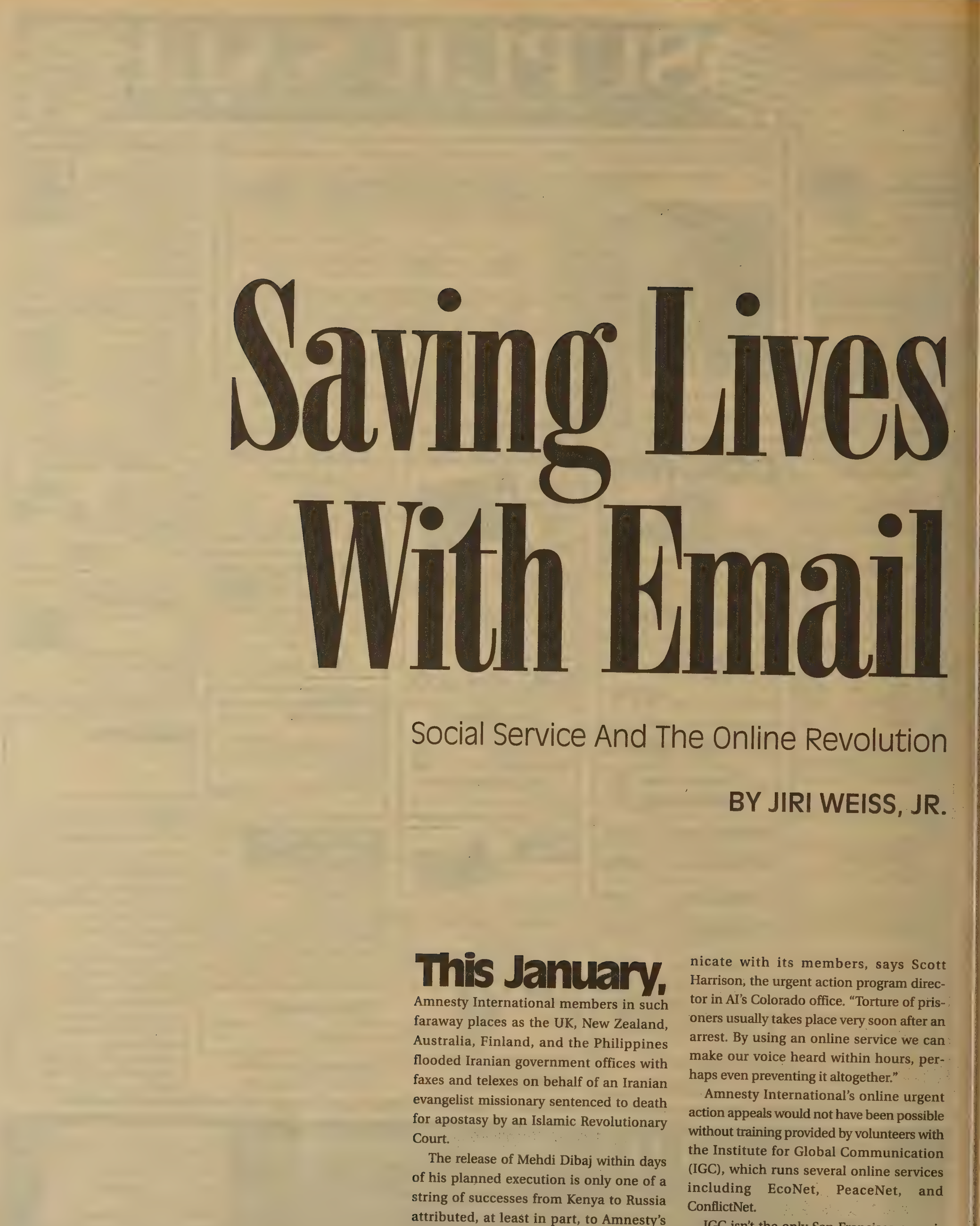

Saving Lives With Email

Social Service And The Online Revolution

BY JIRI WEISS, JR.

This January, Amnesty International members in such faraway places as the UK, New Zealand, Australia, Finland, and the Philippines flooded Iranian government offices with faxes and telexes on behalf of an Iranian evangelist missionary sentenced to death for apostasy by an Islamic Revolutionary Court.

The release of Mehdi Dibaj within days of his planned execution is only one of a string of successes from Kenya to Russia attributed, at least in part, to Amnesty's email network.

Email provides more than just a convenient way for the organization to communicate with its members, says Scott Harrison, the urgent action program director in AI's Colorado office. "Torture of prisoners usually takes place very soon after an arrest. By using an online service we can make our voice heard within hours, perhaps even preventing it altogether."

Amnesty International's online urgent action appeals would not have been possible without training provided by volunteers with the Institute for Global Communication (IGC), which runs several online services including EcoNet, PeaceNet, and ConflictNet.

IGC isn't the only San Francisco organization where volunteers are helping social service agencies realize the online revolution. Others include San Francisco State's

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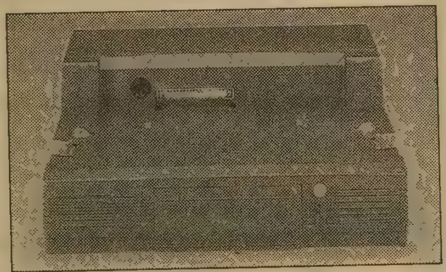

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PC MAGAZINE

"Commax DX2/66 entries achieved the top processor score of 34.7. Commax Smartbook II with Rocket chip performed best, with some DOS video scores topping 4,000......and the best performers on our DOS video test."

August, 1994 Page 118

"Among all the 486DX/33 systems in this review, Commax entry had the best score overall."

August, 1994 Page 145

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SmartBook

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SFSUnet, a group that links homeless agencies free of charge, and a group of telecommunication and computer professionals calling themselves BAIL (Bay Area Internet Literacy) who teach low-cost Internet seminars each month at San Francisco's Modern Times bookstore.

CompuMentor, a nonprofit that matches the skills of volunteers to the computer needs of other nonprofit agencies, trained some thirty social service agencies in Alameda County to use the WELL to set up meetings, swap donated computers and furniture, discuss pending legislation, and coordinate lobbying efforts.

Electronic Grantsmanship

The most productive use of the private conference area, called CoordiNet, has turned out to be grant writing, says Paul Miller, the executive director of the Tri-Cities Children's Center and one of CoordiNet's founders.

Using CoordiNet, member agencies have been able to abandon at least some of their individual scramble for funding in favor of a united approach. Each agency delivers only a small piece of the array of services its clients need to become self-sufficient—whether it's shelter, rental assistance, counseling, child care, or vocational training. Packaging the different services together in grant proposals makes very good sense, Miller says.

Such CoordiNet collaboration has won some seventy-two grants in the three years of the network's existence, totaling some $450,000. The Mission Valley Regional Occupational Program in Fremont, for example, received a $50,000 grant from Alameda County to teach office skills to some twenty low-income women, while two other CoordiNet member organizations provide counseling and child care.

"Sponsors like this kind of collaboration because they kill more than one bird at a time," Miller says. "It's clearly a better way of getting grants."

CompuMentor technical assistance and training of member agency staff was critical to CoordiNet's success, he says. "People need to be sold on the idea before going online, otherwise they just won't do it."

Grant writing turns out to be the most important use of online services for another CompuMentor client: the Mexican Heritage Corporation, a nonprofit which is raising money to build a $15 million cultural center in San Jose. Pete Carillo, the organization's director, joined LatinoNet—the nation's first community Latino network with a membership of some eighty-two organizations—after receiving CompuMentor training.

"My mentor put my name on the net, and within twenty-four hours I received eight to nine pages of funding sources," says Carillo. "That's something which would have taken me hours to research in the library."

Recently, when he got together online with three Latino organizations in Los Altos to discuss an upcoming meeting with Santa Clara officials, Carillo learned LatinoNet can replace face-to-face meetings. "You have to be a good typist and be very specific about what you will discuss; otherwise

IBM, Sony, NEC, Mitsubishi, Samsung, Hitachi, Nissei Sangyo, Sampo, Philips, Nanao, Nokia

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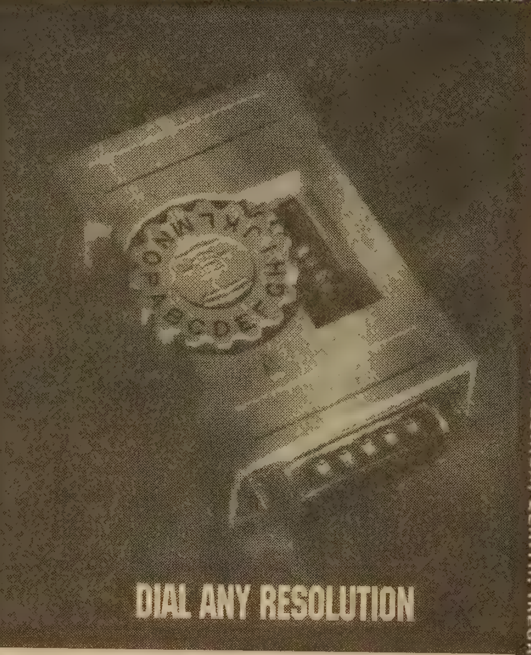

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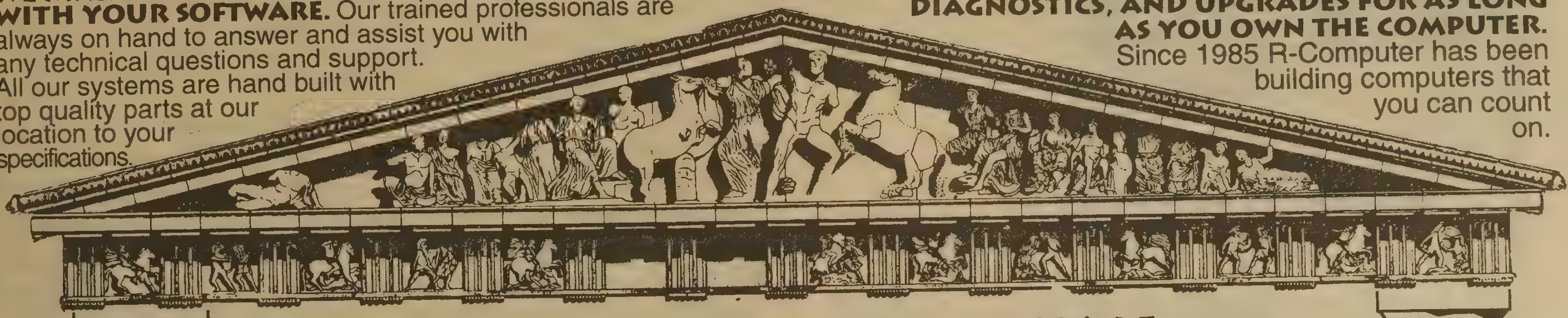

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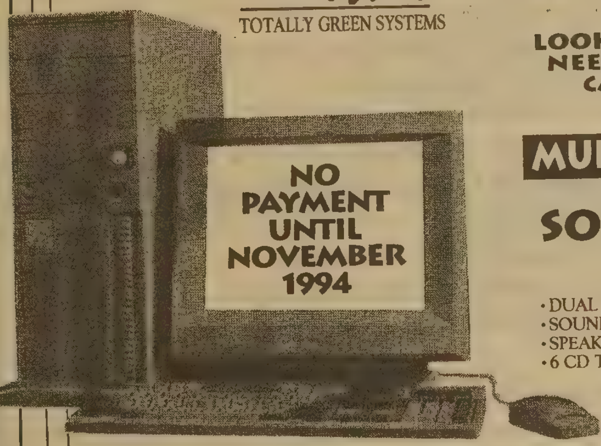

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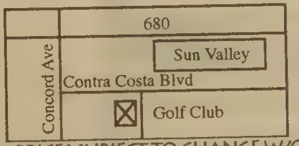

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the conversation can become unruly. But I hope that this kind of thing will get us out of cars and airplanes."

LatinoNet, which includes a calendar, a weekly online newspaper, and a listing of employment and job training opportunities, is planning to go national via the America Online service this year, he says. "What we are developing will be a great opportunity for us not only to get on the information superhighway, but to get into the diamond lane very quickly."

Linking Artists

CompuMentor has also trained many of the three hundred members of ArtsWire, a network designed to link up art organizations and individual artists nationwide. ArtsWire warns artists about hazardous materials, provides information about arts-related jobs, and provides a forum to air controversial issues.

When four performance artists, including feminist Karen Finley, won $252,000 in a settlement of their case against National Endowment for the Arts censorship last year, both the artists themselves and the NEA got online to tell their contradictory sides of the story, says Anna Couey, the network's coordinator. "You wouldn't get this kind of exchange anywhere else." ■

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Volunteer Opportunities

CompuMentor has growing needs for volunteers with skills in such areas as database development, online services, desktop publishing, multimedia, LAN setup, and basic training on Mac, DOS, and Windows products. It especially seeks people who can respond to occasional requests for short-term telephone troubleshooting of common hardware and system problems.

Some of the special projects that need volunteers:

- In San Francisco, CompuMentor is looking for volunteers to work with teachers on innovative DOS-based DTP and telecom (including Internet) at sites serving at-risk students; Novell and 3Com specialists to assess and support LAN projects; and XBase programmers who will design systems for improved site-level use of district data.
- In Burlingame, mentors are needed to train elementary teachers on basic Mac skills, maintenance, and applications (Works, Word, Print Shop); for Novell support; and for multimedia training.
- In communities across the state, CompuMentor is looking for mentors to set up modems and teach local nonprofits how to use online services (including Internet and HandsNet), and provide on-site, telephone, or email support.

To volunteer, or get more information, please contact CompuMentor at (415)512-7784; 1-800-659-3579; e-mail julesg@well.sf.ca.us .

◆◆◆

For volunteer opportunities with SFSUnet, call Pat Bourne, SFSUnet director, (415)474-0212. The group recently received a grant from the Corporation for Public Broadcasting to develop a Freenet for San Francisco, to be called TheCityNet, and plans to teach high school students how to get connected.

◆◆◆

BAIL, which has so far taught over five hundred individuals the basics of Internet, has no office or structure, but you can reach two of its members via email: Matisse Enzer matisse@well.sf.ca.us or Eric Theise verve@well.sf.ca.us .

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IGCU's volunteer contact is Jillaine Smith (415)442-0220 jillaine@igc.apc.org .

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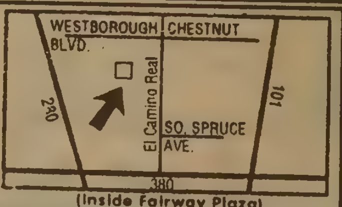

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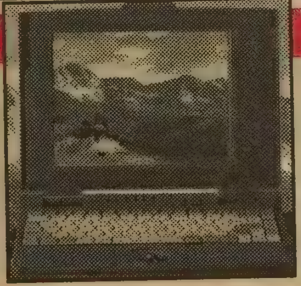

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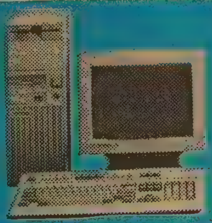

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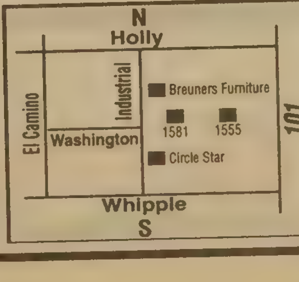

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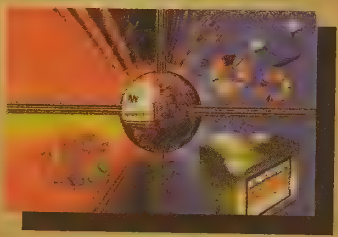

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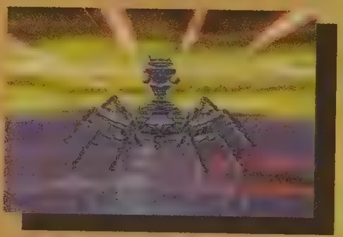

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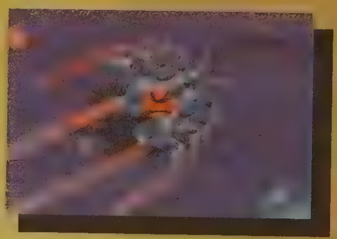

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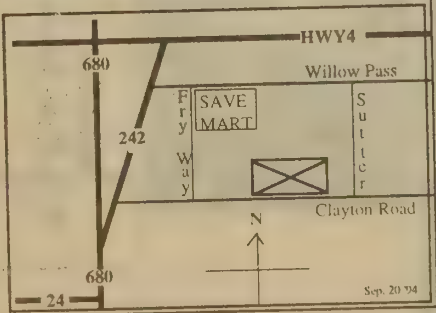

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PentiumS* 66 w/512K	PCI, VLB	$903					$1,778	$1,918
PentiumB* 60 w/256k	PCI, ISA	$766				$1,612	$1,642	$1,781
i486DX4-100 w/256K	VLB	$871				$1,684	$1,714	$1,853
A486DX2-66 w/256K	VLB	$417			$991	$1,230	$1,260	$1,400
C486DX-33 w/256K	VLB	$322			$896	$1,135	$1,165	
I486SLC2-66 w/64K	VLB	$273		$656	$836	$1,065	$1,095	
i486SX-33 w/128K	ISA	$260		$650	$815	$1,048		
i486SX-25	ISA	$220	$453	$611	$776			
A386DX-40 w/128K	ISA	$198	$431	$589	$754			
A386SX-40	ISA	$154	$387	$545				

PCI Systems include PCI IDE Controller and S3C864 1MB PCI Graphic Card

VLB Systems include VLB IDE Controller and Cirrus Logic 5428 1MB VLB Graphic Card

CPUs: A - AMD; C - Cyrix; I - IBM; i - Intel

** Intel Pentium CPU based Systems*

Bay Area On-Site Service Available

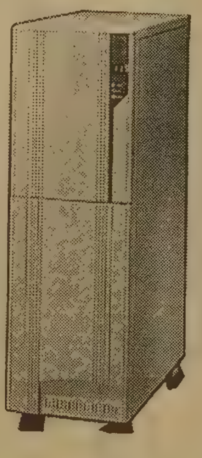
Business/Professional
Multi-Media System

A486DX2-66 w/256K VLB
Compact Med-Tower Case
8 MB RAM
IDE w/2SPG VLB
1.44 MB FDD
212 MB HDD
CL5428 1 MB VLB
15" 1280 x 1024 .28 NI
Double Speed CD-ROM
Pro Audio Spectrum 16
LabTec Speakers
KeyTronic K/B
LogiTech Mouse
MS DOS 6.21, WIN 3.11

$1,550

ASA... ...Proven Systems for all Applications

The Thoroughbred Workstations



Hardware platform for Multiple Operating Systems... and Applications demanding Workstation Power... AutoCad, P-CAD, Windows NT

The THOROUGHBRED Workstations - Top-of-the-Line - Power, Functionality, Price

ARCHITECTURE	UMC(cs) - AMD	UMC(cs) - Intel	Intel(cs) - Intel	Opti(cs) - Intel	Opti(cs) - Intel	MIPS*
Motherboard	MustangS	MustangS	CapricornI	CapricornS	CapricornS	SH-RISC
CPU	Intel 486DX2-66	Intel 486DX4-100	Intel Pentium 60 Mhz	Intel Pentium 66 Mhz	Intel Pentium 90 Mhz	MIPS R4450 - 150
CPU Power Est. (Mips)	21	42	42	48	60	75
Architecture, Cache	VLB, ISA; 256K	VLB, ISA; 256K	PCI, ISA; 256K	PCI, VLB; 512K	PCI, VLB; 512K	EISA, ISA; 512K
RAM	16MB - 64MB	16MB - 64MB	16MB - 128MB	16MB - 128MB	16MB - 128MB	16MB - 256MB
Hard Drive	540 IDE Mxt 8.5 ms	540 IDE Mxt 8.5 ms	540 IDE Mxt 8.5 ms	700MB SCSI-II	1.08GB 9.5ms SCSI-II	1.08GB 9.5ms SCSI-II
Drive Controller	WS IDE	WS IDE	PCI IDE Built-In	Adaptec PCI SCSI-2	Adaptec PCI SCSI-2	32 Bit SCSI-2 Built-in
I/O	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P
Video Card	S3-805 VLB	S3-805 VLB	S3-864 PCI	S3-864 PCI	S3-864 PCI	GUI S3 1MB - 2MB
Monitor	15" .28 1280x1024NI	15" .28 1280x1024NI	15" .28 1280x1024NI	17" .26 1280x1024NI	17" .26 1280x1024NI	17" .26 1280x1024NI
Operating System	MS DOS, WIN 3.1	MS DOS, WIN 3.1	MS DOS, WIN 3.1	MS DOS, WIN 3.1	MS DOS, WIN 3.1	MS DOS, WIN 3.1
Case	SuperT w/300W PS	SuperT w/300W PS	SuperT w/300W PS	SuperT w/300W PS	SuperT w/300W PS	SuperT w/300W PS
Price	$2,019	$2,467	$2,394	$3,218	$3,774	$4,763

WorkStations Include: 1.2 and 1.44 MB Floppy Drives, KeyTronic KeyBoard, Logitech Serial Mouse
*Please ask for list of ported Applications

The Thoroughbred Servers

Outstanding Price Performance and Functionality for Application and Networking Servers

Micro MARKETPLACE

MOTHERBOARDS & CONTROLLERS

ISA/EISA MOTHERBOARDS

286-12/20	**$35/45**
386SX-40	**$43**

THE STALLION SERIES

ISA 386DX-40 w/64,128k	**$87**
ISA 486SX-25	**$109**
486DLC-40 w/128K	**$119**
ISA 486SX33 128K	**$148**
ISA 486DX-33 256k C/AMD/Intel	**$199/219/289**
ISA 486DX-40 256k Cyrix/AMD	**$205/238**
ISA 486DX-50 256K Cyrix/Intel	**$226/359**
ISA486DX2-50 256k C/AMD/Intel	**$227/275/312**
ISA 486DX2-66 w/256k AMD/Intel	**$290/325**
EISA 486DX-50 w/256k	**$495**

VLB/PCI MOTHERBOARDS

486/P24T

MustangF 486SX-25 ISA/VESA	**$109**
MstngS 486DX-33 256C/AMD/Intel	**$215/233/299**
MustangS486DX-40 256K Cyx/AMD	**$219/249**
MustangS486DX-50 256k Cyx/Intel	**$238/369**
MustangS 486DX2-50w/256K Cyrix/AMD/Intel	**$243/289/329**
MustangS 486DX2-66 256K AMD/Intel	**$305/339**
MustangOpti 256k Intel 486-33/66	**$299/335**
IBM Alaris 486SLC2-66 wo/wMath-Co	**$165/189**
IBM BlueLightng 486BL3-75 w/Math-Co	**$239**
Micronix 486-33/50/66 Intel	**$486/561/524**
AMI SVoyager 486-33/50/66 Intel	**$553/628/591**
Mecer PCI/VLB w/256k Intel 486-33/66	**$365/399**
Pegasus N 486-33/50/66 E/I/Vesa	**$415/492/455**
Pegasus NS 486-33/50/66 E/Vesa	**$506/579/535**
Micronix 486-33/50/66 Eisa/Vesa	$755/836/795
AMI Ent IV 486-33/50/66 Eisa/Vesa	**$670/739/695**

Intel PENTIUM and DX-4

MustangS4 486DX4-100 256K	**$779**
CapricornS 512K 60/66 VLB	**$699/789**
CapricornB 256k 60/66 PCI	**$639/730**
CapricornI 256K PCI/ISA 60/66 w/ide-io	**$689/779**
CapricornI 256k PCI/ISA w/ide-io	**$948**
CapricornS 512K PCI/VLB 60/66	**$695/789**
CapricornS 512 PCI/VLB 90Mhz	**$1075**
PegasusA Dual PCI/EISA 256K 90	$1530

RAID Controllers in Networking Section

ISA/EISA CONTROLLERS

IDE/MFM/RLL & FAST I/Os

Mustang IDE 2FD-2HD/4FD-2HD	**$14/28**
Mustang IDE w/ 2SPG	**$15**
Promise IDE Caching DC200 2FD/4HD	**$97**
FAST-PIG IDE,IO/IO w/16C550 Uarts	**$35/28**
ULTRA-IO 4S/2P 4 16C550 Bi-Dir	**$96**

SCSI

Future Domain Compatible16 bit	**$49**
Trantor SCSI Adapter T-130	**$52**
ADAP 1522 16BIT Card/Kit	**$70/137**
ADAP 1542C Card/Kit	**$170/250**
ADAP 1542C+ Kit (w/Corel SCSI)	**$317**
ADAP 1742 EISA	**$369**
ADAP 2742 EISA Fast SCSI2 C/K	**$304/357**
Bus Logic BT747S Card/Kit 747S	**$294/316**
DTC3290AS 7HD&4FD Caching	$441
Future Domain TMC1680 SCSI II C/K	$146/203
AMI EISA SCSI II Caching wo/w pwrpk	$373/410
DPT Smart Cache3 EISA SCSI	$331
Mylex DCE EISA SCSI Caching Ctlr**	$228
Trantor348 Parallel Port to SCSI	$149

VLB/PCI CONTROLLERS

IDE

Mustang IDE-IO VLB/PCI	**$20/25**
MustangP IDE w/Fast IO/ w/OS2 Drvr	**$39/49**
MustangP 420 w/512k IDE/IO	**$106**
MustangW 2008 2HD/4FD/2S/1P/2.88	**$44**
MustangW 2018 2HD/4FD/2S(16550)/1P 2.88	$50
DTC 2277 IDE Caching	$105
DTC 2278 IDE/IO	$29
Promise DC-4030 4HD/2FD Caching	**$109**

SCSI

DTC 3270 SCSI I	**$109**
BusLogic BT445S Fast SCSI-II	**$194**
AMI SCSI II Caching w/wo pwrpk	$373/410
ADAPTEC 2842 SCSI II Kit	**$240**
BusLogic KT946S SCSI-2 PCI Kit	**$269**
Adaptec 2940 PCI Kit bulk/Retail	**$201/291**
NCR SCSI PCI Controller	**$81**

Cases - Power Supplies - KeyBoards - Mice

ROADRUNNER SERIES

Baby Desk/Mini Tower w/PS	$44/37
Medium Tower w/PS Compact/Regular	$45/60
Full Tower(230W)/Big Tower(300W)	$72/170
Rack Mount W/PS	$290

DIAMOND SERIES (For Black add $5)

Baby Desk/Mini Tower w/PS	$66
Medium Tower Thick w/PS	$90
Full Tower w/PS	$99
File Server w/ 400W PS, 3 Fans 12 F/HDD	$359

External HDD/CD-ROM Cases

1HH w/PS 3.5"/5.25"	$65/73
1FH(2HH)/2FH(3HH)/7HH w/PS	$91/132/229
Removable IDE Chasis & Carrier	$37
SCSI Cables Int/Ext	$10/11

For Un-Interruptible Power Supplies see UPS's in Networking Section

KEYBOARDS AND MICE

Regular/Spill-Resistant 101	$15/16
MaxiSwitch/KeyTronic	$23/26
Small 11.5" 88 Keys/**BLACK 101**	$31
Russian/Spanish Keyboard	$17/18
Japanese Keyboard, 106 Keys	$59
SEJIN J-Mouse (mouse under 'J' Key)	$95

Also line of European/Arabic KBs

S-Mouse/TBall	$8/20
LogiTech Ser/Bus bulk	$17/34
LogiTech Mouseman Cordless	$82
Microsoft white box S/B	$23/54
BLACK SERIAL	$14

POWER SUPPLIES

PS2 200/230/300W	$34/40/51
PS2 200W **GREEN PC**	$44
Full Tower 230/300/400W	$49/63/126

MASS STORAGE PRODUCTS

FlOPPY DRIVES

YE Data 1.2/1.44MB	**$38.5/31.5**
Teac 1.2/1.44MB	**$43/32.5**
Teac Dual Floppy 1.2 + 1.44 MB	**$89**
Teac 2.88 MB	**$99**

HARD DRIVES

2.5" NOTEBOOK DRIVES

QUN 127 /256MB 16msec	$225/339

IDE

(Hard drive prices change often-please call)

Dae Young 120 (3 month warranty)	**$119**
MXTR/**QTM** 170MB 17 msec	$139/149
CON 210 14msec	**$155**
CON/WD 250MB 14msec	$179
QTM 270/MXT 245MB 15ms.	**$169**/179
WD 340/**MXT 340MB** 12/14 ms.	$189/**$179**
CON/QTM 340MB	$189
CON 420MB	**$195**
WD 425MB 13msec	$205
QTM 540MB 11msec	**$239**
WD 540 12msec	$269
MXTR 540 8.5/12 msec	**$259/249**
CON 540MB 12msec	$255
CON 1.0 GB	$546
MICROPOLIS 1/1.8GB 10ms	$629/925

SCSI - 3.5"

QTM 42MB SCSI	**$69**
CON/QTM 170MB 17msec	$189
CON 212MB 12 msec	$202
MXTR 213	$202
MXT 290	$206
MXT 340MB 15 msec	$219
CON 340MB 13msec	$238
QUN 540MB FAST	**$269**
MXT 540MB /CON 540 8/12 ms	**$309**/319
Quantum 700	**$389**
QTM 1.4 GB 10msec 5 year	$739
DEC 1.07GB DSP3107 9ms	$757
DEC 1.6GB DSP3160 9ms	$986
Quantum 1.08 GB	**$599**
MICROPOLIS 1/1.8GB 10ms	$629/925
HP1.2GB 10.5msec	$779
ST1.2GB ST31200N 9 msec	**$599**
Quantum 2.1 GB	$1059
ST12400N ST2.1GB 9MS	**$1079**
DEC 2.1GB DSP3210 9ms	$1259
ST 3.4GB ST43400N	$1829
ST 15150N 4.29GB 8msec	$2539
ST 9GB ST410800N	$4148

SCSI - 5.25"

DEC 3.0GB DSP5300	$2046
DEC 3.5GB DSP 5350	$2312
DEC 4.0GB DSP 5400	$2488

SUPER HARD DRIVES

Seagate Barracuda 3.5" HH (8 msec avg. seek, 4.17 msec lat., 7200 RPM) 1.7/2.5/4.2 GB	$1155/12602475

FLASH CARD HARD DRIVE

ST 75A 1.8" 5.2MB IDE<1.5MS	$484
ST 710/720A 1.8" 10.4/20.9MB	$888/1177
ST 740A 1.8" 41.9MB IDE<1.5ms	$2068

EXTERNAL HRD. DRV. SUBSYSTEM

FOR EXT. HARD DRIVE,	ADD $99

TAPE DRIVES

(<500MB TAPE-BACKUPs)

Colorado 120 / 250MB	**$99/159**
Conner 250MB w/Cassette	**$144**
Colorado KE-10 External kit with card	**$105**
Colorado External port card	**$37**
FC-10 high perf card	**$85**
Colorado Trakker 250MB	**$329**
Archive Viper 250MB hh SCSI I/E	**$325/399**

(>500MB for PC / SERVER)

Viper 525MB hh SCSI Int/Ext 6MB/sec	$440/525
Mountain FS1200 4GB I/E	$1545/2175
Conner-Python 4320 NT 2.0GB DAT 3.5"	$750
Conner-Python 4324RP 4.0GB DAT 3.5"	$856
Colorado 2.4 / 4.0 GB Qic 5.25	$859/975
HP 2GB DAT 4mm Int/Ext	$862/952
HP 4-8GB 35480 DAT 4mm Int/Ext	$979/1090
HP 8-16GB DAT 1533A 4mm Int/Ext	$1149/1229
WANGTEK 5100 1.0GB 4mm Int/Ext	$639/769
WANGTEK 3100/3200 2/4GB 4mm Int	$879/1035
WANGTEK 3400 8-16GB 4mm Int	$1099
EXABYTE 4200/4200C 2/4GB	$829/949
EXABYTE 8205 5GB 8mm 5.25 I/E	$1365/1595
EXABYTE 8505 10GB 8mm Int/Ext	$2050/2140

(above drives require special contr & soft drivers)

TAPE BACKUP DRIVERS

Novaback for DOS//OS/2	$65
Novanet Multiuser NLM	$279
ARC Serve Single	$125
SYTOS for DOS/NOVELL, GEN	$120
Conner Backup Exec for Dos/Win v3.3	$79
Conner Backup Exec for Netware v3.1	$259

MAG/OPTICAL (Rewritable)

Ricoh 128MB 3.5" Internal	$532
Panasonic LF-7010 1GB 5.25	$2799
HP 1.3GB 5.25" SCSI-2 EXT	$2799
MAXOPTIC 1GB Tahiti IIM 35msec	$2260

REMOVABLE DRIVES

Syquest 44MB Dr.	$249
W/Ext Case, Cables, Cart, Cont.	$379
Syquest 88/105MB Dr.	$308/389
Bernoulli 44/99 Insider	$907/840
IDE: Upto 1GB removable kits	$39
SCSI: Upto 1GB Removable Kits	$138

DISKETTES & CARTRIDGES

Floppy 1.44 Bulk 20+/100+/500+	**$.49/.39/.34**
Floppy 1.2 Bulk	**$.44**
Tape DC2120 250MB..Formatted	**$16**
Tape DC 6250 5.25", 1/4" Cartridge	$25
Tape DC 6525 5.25", 1/4" Cartridge	$30
TK50 for DECs	$24
DAT 4mm 90 mtr HP/OEM	$20/14
DAT 8mm 112 mtr.	$14
Syquest 44/88/105MB Cart.	$62/94/85
Bernoulli 44MB/90MB 3Pk	$289/298/264
Mag-Opt 600MB/650MB 5.25" Rewrite	$86/86
Mag-Opt 1.2/1.3 GB Rewrite	$124/124
Mag-Opt 600/650MB WriteOnce	$86/86
Mag-Opt 1.2/1.3GB WriteOnce	$128/128
Mag-Opt 128MB 3.5"	$58
Mag-Opt 650/1.3GB WORM 5.25"	$160/193

VIDEO ADAPTERS & MONITORS

ISA/EISA ADAPTERS

MGP	$13
VGA 256k	$27
Trident 512K/1MB	$37/58
Tseng ET4000 1MB	$73
Mustang 1MB Window Accel	$58
Diamond Stealth 24	$137
Hercules Dynamite Pro 1/2MB	165/204
Hercules Graphite Pro 1/2MB	$274/418
ATI Ultra Grpx 1MB w/Mouse	$214
ATI Ultra 8514 1 MB VRAM(Dual mon. cap.)	**$176**
ATI Ultra Pro EISA 2MB	$316
AMI Fast View EISA VGA Graphics w/1MB	$221

VLB/PCI ADAPTERS

(wm = winmark ver2.5)

MustangVT Trident VLB 1/2MB	**$69/114**
MustangVC Cirrus logic VLB 5428 1/2	**$79/126**
MustangVS S3-805 VLB 1/2MB	**$89/134**
Spider 32 1MB/2MB,20 WM	**$91/136**
Spider 32 Plus 1MB	**$95**
Spider 64 1/2MB VLB/PCI	**$173/263**
Spider Black Widow+ 1/2MB PCI/VLB	**$134/197**
DIAMOND Stealth 24VLB 1MB	**$137**
DIAMOND Stealth 64 1/2MB PCI/VLB	**$255/316**
DIAMOND Viper 2MB VLB/PCI 50wm	**$249**
DIAMOND Viper SE 2MB PCI/VLB	$277
ORCHID Celsius 1/2MB	$216/266
ORCHID Kelvin 1/2MB PCI/VLB	$135/180
Hercules Dynamite Pro 1/2MBPCI/VLB	**172/225**
Hercules Graphite Pro 1/2MB	$274/418
ATI Graphics Wonder 1MB DRAM PCI/VLB	$126
ATI Ultra Plus 2MB DRAM PCI/VLB	$176
ATI Graphics Exp. 2M B DRAM PCI/VLB	$244
ATI GraphicsProTurbo 2/4MB PCI/VLB	$288/499
Cirrus Logic 5428 PCI 1/2MB	$126/171
S3-864 PCI 1/2MB	$109/160

CAD SPECIALITY ADAPTERS

NUMBER NINE - #9GXI/GXE

L10 ISA or VLB Retail/Bulk	$249/236
L11 ISA or VLB Retail/Bulk	$359/339
L12ISA&VLBRetail/Bulk	$420/406
L14 ISA&VLB Retail/Bulk	$639/589
64 1MB/2MB....PCI or VLB	$175/249
64 PRO 2MB/4MB	$365/549

MATROX

MGA-VLB 2/Plus	$409/459
MGA-VLB 4/200	$845
MGA-IMP 3A&V	$699
MGA-PRO 4.5V/4.5+z buffer	$1095/1379
MB memory upgrade	$209
MGA-PCI 2/2Plus	$365/409
MGA-PCI 4/4-200	$616/768

METHEUS CORPORATION

Premier 928 VL2(1MB)/4(2MB)	$324/559
Premier 928 ISA 1M/2M/4M	$297/422/725
MODULE 1MB Memory	$119
1104 Plus 256 Hz, MultiDisplay	$1295

(We do not have the high end CAD adapters and monitors on display and carry only a few in stock - these are on Just-In-Time inventory basis - please place orders in advance-the prices in parenthesis are on a cash basis only)

14" MONITORS

MONO

Mono 14" amber/white	**$76**
Mono 14" SVGA	**$89**

VGA/SVGA

SVGA 14" 1024 x 768 .39	**$191**
SVGA 14" 1024 x 768 .28 Int	**$210**
SVGA 14" 1024 x 768 .28 NI	**$221**
Black SVGA 1024 x .28 I/NI	$270/282
Kanaka 14" Int/NI w/Hitachi Tube	**$233/256**
CTX 14" 1024 x 768 .28 Int.	**$247**
CTX 14" 1024 x 768 .28 NI	**$260**

CAD MONITORS

Miscellaneous

KFC15".28 1280x1024NI wo/w Digital	**$306/379**
Mitac 15" .28 1280 LowRad,Energy*	**$315**
KFC 17" .26 1280x1024 NI w/o digital	**$639**
KFC 17" .26 1280x w/digital display	**$685**
Mitac 17" .26 1600x NI Energy*	**$689**
Viewsonic 6E 14" .28 NI Green	**$262**
Viewsonic 15E 15" 1024x .28	$365
Viewsonic 15 .28 1280x MPR2	$425
Viewsonic 17" 1600x1280 .27	**$889**
MAGNVX20CM64 20", 1280, .31.($1110)	$1150

NANAO

F550iw17",.281280NI MPR2	($945) $998
T560iW 17",.25 1280NI, MPR2	($1185) $1250
T560i,.26 1280NI,MPR2	($1415)$1490
T660i 20",.30 1280NI MPR2	($1999) $2110
F760iw21".31,1280NI,MPR2	($1919) $2015

NSA-Hitachi

CM 1586 15" .28 1280x	$415
NS 1764 17" .28 NI 1280x	($795)825
CM1797 17`.28.1280NI,MPRII	($975)$1099
CM2095 20" 1280 Anti Glare	($1239) $1295
CM2087 20" 1280 72Hz Mic	($1499) $1555
CM2187-515 21" .28 1280NI	($1699) $1785
CM 2188 21" .28 1280NI	($1950)$1989

Hitachi America - ACCUVUE

PS-20,.31dpi 1600x NI	($1555)$1618
PS-21,.28dpi 1600xNI	($2029)$2099
PS-21A,.28dpi 1600xNI	($2149)$2259

Sony

15SF 15" 1280x .25	$445
GDM17SE 17" 1600NI .25	($955)$999
GDM20SE 20"	($1865)$1939

Nokia

17" 447B Trin.25dpi, 1280x	($927)$975
21"445M.26, 1280NI	($1955)$2029
21"445X.26, 1600NI	($2566)$2615

Sampo

Sampo KDM1767 17" .28	($668)$695
Sampo 1777 17" .28 Microp	($749)$785
Sampo 2055 20" .31	($1040)$1075
Sampo KDM2077 20" NI 1280 .31	($1460)$1520

NEC

2V 14" NI .28 1024x	$439
3V/4FGE	$485/($635)$659
5FGE/FGP17".28,	($999)$1045/($1125)$1165
6FGP21",.28, 1280NI	($2005)$2095

MAG

MX15F 15"MPR II	($459)/$477
DX15F 15"	**$379**
DX 17F 17" .26 1280x	($695)/$725
MX17F,17".26,1280NI,Mic Org	($798)/$835

Prices given in bold are usual stock items, prices not in bold are special order items and require a 20% deposit, are not returnable, and take 2-3 days lead time.

	HARD DRIVES	HARD DRIVES	HARD DRIVES	HARD DRIVES	NETWORKING	MULTIMEDIA
CASH COUPONS	CONNER 420IDE $ 199	QUANTUM 540 MB IDE $ 249	Conner 1 GB IDE/SCSI $539/625	QUANTUM 2.1 GB 10MSEC/5YEARWARNTY $1,049	16BIT NE2000 COMP COAX/TP.....$29 16 BIT NE2000COMP COMBO.....$39 INTEL 10BT FLASH.............$99 8 PORT TP HUB W/AUI.........$159 16 PORT TP HUB W/AUI........$359	8BIT SOUND C/KIT.......$39/59 MITSUMI 1X CD ROM..........$79 MITSUMI 2X INT...............$130 TOSHIBA 2X 3401 INT.....$261 NEC 510-CDR 3X..........$334

MicroMARKETPLACE

MULTI MEDIA

CD-ROMs

IDE TYPE CD-ROMs

CD-ROM-#1-of-the-Month
Mitsumi Kit 350msec, 150 KB/S.........$79

Panasonic 562 DblSpd.320ms, 300kb/sec	**$138**
Mitsumi Dbl-Spd 250ms,300kb/sec	**$123**
SONY CDU 33A 320ms/300kb	$159

Super Multi-Media Complete Kit on Sale!
Mitsumi CD-ROM, 150KB/sec, 350ms
8 bit Sound Blaster Compatible Card (for Win)
Quickshot Warrior joystick
Shielded PC spealers
Deluxe model microphone
Award winning Apogee sound-supported games; all for.................$138!!!

SCSI CD-ROMs

NEC 3X 510CDR Ext 195ms,450KB/sec	**$434**
NEC 3XP Portable 250ms,450KB/sec	$395
NEC 4X Pro 16bit 180ms/600kb sec	$989

CD-ROM-#2-of-the-Month
NEC 3X CDR-510 Multispin,
195ms,450KBS....$289

TOSHIBA 3401B/E 200ms, 300kb/s I/E.	**$249/329**
TOSHIBA 4101 B/E 235ms,300Kb/sec Int	$210
Plextor(texel) 3028/5028 240/335..I/E	**$249/379**
Plextor Quad speed bare/w 16 bit adp.	**$525/595**
SONY CDU 561, 295ms, 300kb/sec	$286
Future Domain Comp. SCSI CD-ROM Kit	$69

AUDIO CARDS & MPC KITS

Hyena Snd Blster Comp. 8bit Sound Card	**$39**
Hyena w/ Speaker, Joystck, mcrphn, game.	**$50**

MEDIA VISION

Pro Audio Spectrum 16 w/scsi OEM	**$89**
Pro Audio Studio 16/Power Pack	$125/59
Fusion Double CD16 Kit Int	$289
Pro 16 Multi-Media System1 SCSI /II	$649/449
Pro Movie Studio	$173

CREATIVE LABS

Sound Blaster VE/Deluxe 8 bit	$59/78
Sound Blaster 16 BasicVE	**$99**
Sound B MCD/ASP (for Pan,Mit,Sony).	**$135/166**
Sound Blaster SCSI/SCSI2 ASP	**$144/202**
Discovery 16 kit	$319
Sound Blaster Voice Editor	$55
Wave/Video BlasterSE	$179/285

MISC MULTI-MEDIA PRODUCTS

Encyl 1:Encyl,Animals,World/US Atlas..	**$39**
Educational 1 plus Family health	**$68**
Joystick	**$15**
Logitech Fotoman Plus Digital Camera	$565
Logitech SoundMan 16 v1.1/Wave	$79/185
Video Logic Captivator Kit win3.1	$369
Midi Mate/CDPC XL	$49/1059

PLOTTERS, DIGITIZERS, SCANNERS & PRINTERS

PLOTTERS

HOUSTON INSTRUMENTS

V50 INKJET A-C,2MB BUFFER	$1298
HiPlot 7100 A-D 8 pen,LCD display	$2575
HiPlot 7200 A-E 8 pen,LCD display	$3395
DMP-162R A-E, 8 Pen, Roll Feed	$3958

DIGITIZERS

SUMMAGRAPHICS

III 12x12 w/16btn or 4bt & Pen	$312
III 12x18 w/16btn or 4bt & Pen	$539

KURTA

XLP 12x12 w/4btn & Pen	$225
XLP 12x18 w/16btn or 4btn & Pen	$429
XGT 12x12 w/4Btn	$322
XLC 36x48 w/16btn or 4btn&pen	$1520

CALCOMP

CALCOMP 12 X 12/12 x 18	$299/618
CALCOMP 18 X 24/24x36	$1275/1399

SCANNERS

LOGITECH (HAND-HELD)

SCANMAN-color Phototouch/OmniPg	$347/398
SCANMAN 256GS wo/ w OmniPage	$153/195
SCANMAN 32GS w/ OmniPage	$113
Scanman Power Page Slide	$404

MICROTEK

Scanmaker II/IIXE 1200/600dpi w/OCR	$521/899
Scanmaker IIHR 600dpi	$1055
Scanmaker IIG/IISP color cap 600dpi	$392/769

MUSTEK (Hand-held)

ScanMagic256, 400dpiw/perceive	$109
ScanMagic Color,400dpi,256 grays w/perc	$219
GrayArtist,800dpi,256 grays w/perc	$134
Colorartist Pro,800dpi,256&colr w/per	$249

MUSTEK (Flatbed)

Paragon 600(dpi)24 bitclr,Photoshop	$549
Paragon1200(dpi)24 bitclr,Photoshop	$839

UMAX Technologies

UC 630 PC,1200dpi max,24bit /256gray	$675
UC840,1600dpi max,16.8 million clrs	$889
UC1260,2400dpi max,16.8 million clrs	$1185
UC1200SE,2400dpi max.,30 bitclrs	$2550

Hewlett Packard

HP IICX Color scanner	$989

EPSON

ActionScanning 300/ES 1200C	$815/1295

Miscellaneous

Info 3gs 300dpi sheet fed	$375
Info SF-6C 600dpi sheet fed	$450
Relysis 9600 800dpi color flatbed	$2995
Tamarack 6000/8000C	$729/853

Fujitsu (Flatbed)

M3096E/G 11.7x17"400dpi 20ppm	**$4222/4994**

PRINTERS

Miscellaneous

Star Micrnix NX1001 9 Pin.120/220V	$134/144
Star Micronix 220v quantity of 100 only	$135
IGOR 132 9Pin Wide **220V** (Cyri..).in stock......with any purchase	$110

EPSON

Action 2250 9 pin,50sheet,240cps	$133
LQ570+ 24 pin wide, 269 cps, 11 fonts	$249
LQ 1070+ 24 pin Wide,252cps,11fts	$369
LQ 1170 24Pin ,2 resident fonts	$609
Stylus 300 Inkjet 360dpi,150cps	$221
Stylus 800 Inkjet 360dpi,150cps,100sht	$283
ActionLaser 1500 300dpi,6ppm,1mb	$655
Actionlaser 1600 600dpi/Stylus color	$947/565
DFX-5000 9pin,wide, high spd. 533cps	$1485
DFX-8000 9pin, wide high spd1066cps	$2345

CANON

BJ200e230,360dpi,49k,7fnts,4ppm	$295/395
BJ10SX,110cps,360dpi,**Portable**	$241
BJC 600 Color,240cps,360dpi,100shtfd	$579
BJC 820 Color,240cps,4ppm,1MB	$1467

OKIDATA

OL 380/321 dotmatrix,24Pin,23K	$217/420
OL400e/410elaser 4ppm, 300dpi	$489/635
OL810, 8ppm, 300dpi	$875
OL830 Plus/850, 8ppm w/ 2MB ps	$1055/1165
OKI ML520/521 9 pin 64K	$359/475
OKI ML590/591 24 pin..auto form	$417/561

PANASONIC

KX-P2124, N-Carr, 320cps, 360dpi, 12fnts	$318
KX-P2624/2023	$381/197
KX-P1624, W-Carr, 192cps, 360dpi, 14fnts	$383
KX-P4410,5ppm,300dpi,28fnts,512k	$529
KX-P4450i/4430	$951/655

CITIZEN

GSX 145 24Pin wide,160cps,360dpi	$349
GSX200 9pin,Narr/wide	$168/289
GSX220 24pin/CTZ projectII 3ppm	$179/279
GSX230 24 pin.8 fonts, 270cps	$221
(color option for Citizen 80 col printers	*$45)*
GSX240 24 pin 300cps, 13 fonts	$281
Notebooks CTZPN48/CTZNP-IBM	$284/326

HEWLETT PACKARD

Deskjet 520 300dpi,120cps,16k	$289
Deskjet 500C Color 300dpi,167cps 16k	$365
Deskjet 560C Color,3ppm,300dpi,80k	$549
Deskjet 1200C/ps Color2MB	$1301/2079
HP 4+/4P/4SI/4L	$1369/935/2835/635
4M+/4ML/4MP/4 SiMX	$1835/965/1350/4185

NEC

Pinwriter3300 24pin wide,360dpi,80K	$326
Pinwriter6200 24pin narrow,360dpi,80k	$399
Pinwriter9300 24pin wide.360dpi 333draft	$839
Silentwriter superscript610,6ppm,256k	$471
Silentwriter1097 600dpi,7mb	$1365

FUJITSU

10/10W Laser,10ppm,1/2mb 14/35fts	$830/942

All printers: Cash basis only and come with the Original Manufacturer's warranty. Please call for lead time. No returns on any printer purchase with this pricing.

MEMORIES, MATH-COs & CPUs

MEMORIES for IBMs

SIMMs

256 x 9 (3 chip)-70NS	**$12**
1M x 9 (3 chip)-70NS Major brand	**$38.75**
1M x 9 (9 chip)-70NS Major brand	**$39.75**
4M x 9 (3 chip)-70NS	**$129**
4M x 9 (9 chip)-70NS	**$144**
1M x 9 (3 chip)-60 Major brand	$41
4M x 9 (9 chip)-60NS	$159

ESIMMs(72 Pin)

256x36-70NS	$55
512x36-70NS	$95
1x36-70NS	**$155**
2x36-70NS	**$315**
4x36-70NS	**$569**
1x36-60NS	$158
2x36-60NS	$329
4x36-60NS	$635
1x32-70 NS	**$139**
2x32-70NS	**$282**
4x32-70NS	**$514**

DRAMs

1x1-70/80NS	$5.50/5.25
256x1-70/80NS	$1.75/1.60
256x4-70/60NS	$5.75/5.50

CPUs & CPU FANS

INTEL

386 DX33	$40
486 SX25/33	**$65/88**
486 DX 33	**$212**
486 DX 50	**$285**
486 DX2 50	**$236**
486 DX2 66	**$243**
486 DX-4 100	$689
Pentium 60MHz	**$419**
Pentium 66MHz	**$505**
Pentium 90MHz	**$699**

AMD

386 DX 33/40	$47/48
486 DX-33	**$145**
486 DX 40	**$163**
486 DX2 50	**$195**
486 DX2 66	**$211**

CYRIX/TI

486 DLC 33/40	$62/68
486 DX 33/40	**$124/129**
486 DX2-50/DX50	**$149/239**

CPU Fans

486 heat sink and fan	**$7.95**
Pentium 60,66/90	**$12/15**

LASER EXT. MEMORIES

HEWLETT-PACKARD

HP IIP, IIP+,III,IIID,IIIP 1/2/3/4MB.	$75/114/155195
HP II, IID 2/4MB	$124/199
HP IIISi 1/4MB	$76/204
HP IV 4/8MB	$165/365
Deskjet 500, 500C, 550C.....256K	$88

PANASONIC

KXP 4410/20/30 ......1/2/3/4MB..	$98/148/175/215
KXP 4450 1MB	$137
KXP 4455 ....2MB	$164

OKIDATA

OKI 400 ....1/2MB	$98/
1 1	9
OKI 800/820 ....2/4MB	$123/193
OKI 810 ....1/2MB	$111/189

MATH-COPROCESSORS

INTEL

80387 SX 16/20/25	$45/64/75
80387 DX 16/20/25/33	$35/40/45/80

Overdrives - call for latest prices

IIT

3C87SX-16/20/25	$39
3C87SX-33	$39
3C87DX-25/33/40	$39

CYRIX

83S87SX 25	$39
83S87SX 33	$39
83D87-33	$41
83D87-40	$41

WEITEK

4167-25	$265
4167-33	$425

Special Terms and Conditions for this Section: CPU and Memory prices change on a daily basis; please call for the latest prices. These products when bought without systems come with a minimum 15 day warranty - please inquire. We do not stock many of the above products - please call for availability.

SOFTWARES

For Networking, Communications, Tape Storage Drivers, Networking Drivers, Multi-Media and Speciality Softwares also look in the corresponding sections.

UTILITIES

Norton Utilities V 7.0/Anti-Virus v2.1	$116/89
QEMM 386 V7.0	$69
AfterDark V2.0 WIN	$29
PC Tools V 8.0A	$57
Auto-Doubler/Disk-Doubler	$68/61
LapLink V5.0 FOR NETWARE	$74
MickyMouse/StarTrek Screen Saver	$39

DESKTOP PUBLISHING & GRAPHICS

Corel Draw V4.0/UPGRADE	$383/218
Pagemaker/WIN V5.0	$554
Harvard Graphics For Windows	$248
Norton Desktop WIN V2.2	$115
Micrographx Graphics Works	$158

DATABASES

Accesss for Windows	$145
CA-Clipper V5.2	$512
DBASE IV V2.0	$513
FoxPro ForWin/DOS 2.5 Upgrade	$300/305
FoxPro LAN	$call
Paradox V4.0/WIN	$524/145
Q & A 4.0	$243
Superbase 2.0 WIN	$345
LOTUS SMARTSUITE	$448
Gupta SQL router/SQL server	$166

ACCOUNTING/BUSINESS

CA-Accpac BPI Integrated	$148
CA-Acc. Simply Accounting DOS	$79
DAC Easy Accounting/Payroll 4.3	$94
Works for WIN 2.0	$129
MS Project 3.0 for WIN	$425
MS Office 4.2 (Word,Excel,Pwrpoint,Mail)	$475
MS Office Pro v4.3	$595
MS Office Pro v4.3 OEM package	$269

SPREADSHEETS

LOTUS WORK V3.0	$99
MS Excel V5.0	$299
MS Works for WIN	$123
Quattro Pro V 5.0 WIN/DOS	$54

WORD PROCESSING AND GRAPHICS

AMI Pro 3.1	$240
Professional Write V 2.2	$159
MS Word 6.0 for DOS/WIN	$305/299
Word Perfect 6.0 for DOS/WIN	$319
WordStar 7.0	$264

COMMUNICATIONS

Procomm Plus 2.01/WIN	$70 /97
WinFax Pro V 3.0 for WIN	$99
Norton PC Anywhere 4.5 Host/Rem	$65/86
CrossTalk for WIN	$129

PROGRAMMING LANGUAGES & OPERATING SYSTEMS

M.S. DOS OEM 6.22	**$45**
M.S. OEM Windows 3.1 for PC system	**$45**
M.S OEM WIN FOR WORKGROUPS 3.11	**$56**
M.S. Windows V 3.11 Original	**$92**
Windows NT 3.1 /UPGRADE	$314/278
Novell DOS 7	$59

Prices given in bold are usual stock items, prices not in bold are special order items and require a 20% deposit, are not returnable, and take 2-3 days lead time.

CASH COUPONS

MONITORS
K F C 17" .26 1280 NI
D I G I T A L
$649

MONITORS
K F C
15" .28 1280
$299

COMMUNICATIONS
2400MODEM..$24
96/24 F/M...........$35
14.4 INT F/M.....$59

COMMUNICATIONS
US ROBOTICS
14.4 F/M Int/Ext
5 YEAR/16550 UART
$105/126
(limited time, one per customer)

MOTHERBOARDS
486 DX VLB W/256K
DX-33 CYRIX...$209
66 AMD/INTEL.$299/329
100DX-4 INTEL.....$749

MOTHERBOARDS
P E N T I U M
Capricorn series
60 Mhz PCI.....$649
66 Mhz PCI/VLB....$792
90 Mhz PCI/VLB...$1,084

ADAPTERS
CONTROLLERS
IO W/16550.......$24
SCSI w/DRIVERS.....$49
ADAPTEC VLB SCSI..$229
ADAPTEC PCI SCSI...$189

ADAPTERS
V L B / P C I
CL 5428 1MB...........$79
HERCULES DYNA 1MB....$165
DIAMOND VIPER 2MB....$239
ET4000 PCI 1MB............$120
ATI PCI 2MB.................$229

COMMUNICATIONS

FAX-MODEMs

PONY 902Z 96/24 Fax (Send)/Mod Int	**$27**
PONY 992Z 96/24 Fax/Modem	**$40**
PONY 992NZ 96/24 F/M, v. 42 bis Enh	**$55**
PONY 1414Z 14.4 F/M,.32/.42 w/Bitfax Int.	**$65**
Pony 14.4 F/M .32/.42 Int w/Voice prm	$126
PONY 992PZ Pocket 96/24 F/M,.32/.42	$63
PONY 1414PZ Pocket 144 F/M, v.32, v.42	$184
PONY 992MG PCMCIA 96/24 F/M v. 42	$132
PONY 1414MG PCMCIA144/144 F/M v.42	$244

AT&T Paradyne

DataPort 14.4 Fax V.32bis Int/Ext	$125/145
Keep in Touch PCMCIA 14.4 S/R Internal	$259

US ROBOTICS

14,4 Sport Mod/Fax V.32b V.42b I/E	**$108/132**
28.8 Mod/Fax I/E	$199/237
14,4 Mac&FAX Ext. Mod/fax	$165
19.2 HST Courier Exyt modem	$389
Modem Sharing Single/Dual Kit	$548/964
World Port Pocket 14.4 Mod/fax Int	$229
PCMCIA Ext type II	$314

SUPRA

14.4 Budget Int/Ext. F/M	$79/105
14.4 Class I Int/Ext F/M	$113/127
14.4 Class II Int/Ext F/M	$154/183
28.8 Int/Ext F/M	$219/249

HAYES

Accura 14.4 F/M .32/.42 Int/Ext	$149/159
Optima 14.4 F/M .42 Int/Ext	$359/372
Optima F/M PCMCIA	$285
Optima 14.4 F/M Pocket	$335
Optima 28.8P F/M	$449

ZYXEL

U-1496B 16.8/14.4 VoiceFax SW,S/R Int	$318
U-1496B+19.2/14.4 Voice Fax SW,S/R Int	$429
U-1496E 16.8/14.4 VFax SW,S/R LED Ext	$298
U-1496E+ 19.2/14.4VFaxSW,S/R LED Ext	$419
U-1496+ 19.2/14.4VFaxSW,S/R LCD Ext	$625
U-1496+19.2/14.4 S/R LCD MAC Ext	$639
U-1496E+ 19.2/14.4 S/R LED MAC Ext	$429

PRACTICAL PERIPHERALS

14.4 Fax/Modem S/R Internal	$143
14.4 Fax/Modem S/R External	$154

Miscellaneous

XIROM 14.4 PCMCIA	$
Megahertz 14.4 PCMCIA Type3	$298
Motorola 14.4 Int/Ext	$call

NETWORKING PRODUCTS & SERVICES

ETHERNET Adapters

NE 2000 Plus Comp 16bit Coax/10BT	**$29/29**
NE2000 Plus Comp Combo soft&hard config	**$36**
D-Link 16 Bit,SoftConfig. 10BT 1/6 Pack	$70/377
Intel EtherExpress 16/5pk/20pk	$104/479/1815
Intel EtherExpress 16 MCA C/16 MCA TP	$171
Intel EtherExpress 32 EISA/Flash 32C	$419/239
Intel EtherExpFlas TP/C 5/20pk	$112/585/2059
SMC Ethcard 16 Ult Cx/6 Pk/24pk	$109/574/2149
SMCEite 16 ultra combo	$122
SMCEthcard+Elite16 Cx/TP1/6/24	$119/615/2289
3 Com 503 Etherlink II 16 Bit Coax/TP	$159/169
3 Com 507 Ethlink II 16 Bit Coax/TP	**$289/299**
3 Com 509 Ethlink III Coax/5Pk	$119/505
3 Com 509 Eth III Combo bulk 5/20	**$109/535/2099**
3 Com EthIII EISA Coax/TP 1/5pk	$225/959
EagleNE2000 Plus/5Pk	$89/385
EagleEP2000 Plus/5pk	$92/405
Eagle 3210 Eisa C/TP	$165
Eagle NE2000 +/3 3-in-1 combo	$119
Asante Etherpack2000+ Coax/10 BT	$129
Microdyne NE2000 Plus	$109/94
HP Ethertwist PCLink/6pk	$159/759

ARCNET

16bIT Star/bus Topology-combo	$65
4Port Passive Hub	$15
8 Port Coax stackable Active Hub	$139

ADAPTERS for TOKEN RING

Intel Token Express 16/4 ISA/MCA	$429/469
SMC Token Ring Adapter 16/4	$345
3 Com Tokenlink III 16/4 ISA/EISA	$455/635
IBM Token Ring Adap II	$289

POCKET LAN ADAPTERS for Notebooks

Advanced LAN Net Coax/10BT	$129
XIRCOM PE3 10B2/BT/BC	$274/274/299
XIRCOM 16/4 MBNS Tokenring w/Type 1Bnc.	$525
Xircom 16/4 Tokenring w/Type 3Coax	$525
DLINK DE-600 Softconfig. Coax/10BT	$172

PCMCIA ADADAPTERS for PalmTops

DLink DE-650 Coax/TP	$191/195
NATIONAL NE4100 COAX/10 BASE T	$214
XIRCOM Credit Card BNC/RJ-45	$269
XIRCOM Crdit Card Courso	$299
GVC Adapter	$137

CABLES & CONNECTORS

Readymade w/Connectors 10'/25'/50'	$4/6/9
RJ45 10BT patch cabnles 7'/25'	$4/6
Token Ring patch cable	$23
RG58 Bulk SPOOL	$80
RJ45 10BT 1000' level4/5	$119/130
BNC 50 Ohm Terminators/Crimp-ON/Barrel	$1.49
BNC T-Connectors	$1.99

Concentrators

CeLan 2-Port BNC/AVI Repeater	$235
Ce-Lan 4-Port BNC/AVI Repeater	$445
Allied Telesis 4-Port Repeater 2AVI,2BNC	$750
Allied Telesis,4-Port,8BNC, 1AVI	$699
Allied Telesis,8 -Port,8 BNC, 1AVI	$785
Allied Telesis-3008 Multi-port 8BNC, 1AVI	$1189

We provide Networking
Installation and Maintenance
Services at good rates

Hubs

CeLan 8 Port 10 BT w/BNC Cascade port	**$155**
CeLan16 Port 10BT w/AUI exp. port	**$375**
CeLan 16 Port 10BT managable	$399
Allied Telesis 12 Port RJ45,1AUI	$459
Asante 8 Port Hub,8RJ45,1BNC	$249
Asante 12 Ports,12tp,1BNC Thin,1 AUI Thick	$475
Asante 1701 Smart 12Ports/SNMP	$1019
Microdyne 18 port 10 Base T5000 series	$619
D-Link 12 Port 10 BaseT	$399
D-link DE-1500 w/SNMP	$869
D-link K1032 32Port w/SNMP	$1199
Intel EE 12 Port 10 BT Hub Int w/Harmonica	$634
Intel EE 12 Port Hub Int EISA w/Harmonica	$699
SMC 8 Port Concentrator/12 Ports TP	$309/559
SMC 12Port net mgmt ready	$865
Synoptics 2800 A 16 Port w/AVI	$699
Synoptics 2804 16 Port w/Fiber Optics	$951
3 Com Link Builder 3C621 12 Port	$345
3 Com Link Builder FMS 24/48 port	$1179/2689

BRIDGES

Allied Telesis local Ethernet Bridge	$1645
3 Com 802C NetBuilder local Ethernet	$3399
3Com 750 NetBuilder Token Ring local	$4714
3Com 5823C NetBuilder Remote	$5319
Synoptics 3323S Ether Local w/AVI	$2353
Synoptics 3522 Token Ring	$5319
Novell Multiprotocol Router v 2.0	$669

PRINTER SHARING

Ethernet Print Servers

INTEL

Ethernet NetPort II for Coax,10BaseT	$385/379
Token Ring NetPort with DB9 Connector	$529
Netport ExpressXL Coax, UTP, 10BaseT	$624

(Conpact design for easy connectivity on on versions of Novell Netware. Comes with either 1S/1P or 2P ports)

OTHERS

Eagle NPE400 Parallel Port RJ-45/Coax (1P)	$364
XIRCOM Pocket Ethernet RJ45/Coax	$305/289

(Allows a Pocket LAN Adapter and a Parallel Printer to be attached to one LPT Port)

DEDICATED PRINTING BASED

Simple AUTO-SWITCHING

2 Computers to 1 printer Electronics	**$24**
4 Computers to 1 printer Electronics	**$38**
2 Computers to 1 Printer Bi-directional S/P	$49/45
4 Computers to 1 Printer Bi-directional S/P	$69/61
*Fax Swithcer 2 Port Fax/Telephone	$85

PRIMAX Advanced Printer Sharing

PrinterNET Transm/Rec. kit (w/25')	$69
PrinterNET Starter kit	$155

(It can connect 16 computers to 6 printers)

ModularLink Transm DB-25(w/25')	$40
ModularLink Receiver Cen.	$45
ModularLink Starter Kit	$106

(it can connect up to 16 computers 1 to printer)

NOVELL NETWARE

Ver 3.12 5/10/25/50 User	$595/1329/1885/2539
Ver 3.12 100/250 User	$3883/6257
Ver4.02 5/10 User	$815/1865
Ver4.02 25/50 User	$2555/3399
Ver4 .02 100/250 User	$4699/9143
Ver4 .02 500/1000 User	$15375/27932
Netware Personal 2User kit w/2 coax cards	$169
Netware Lite v1.1 w/Win utilities	$72
DR DOS 6.0	$72

(Novel's prices are changing frequently, so please call for the latest price changes)

EIECTRONIC MAIL

by CC:MAIL

Platform Packs: *(For connectivity on all LANs and across all LAN Bridges and Gateways. For support of any combination of Server-to-Server, LAN-to-LAN, and Remote Workstation-to-LAN messaging. One Platform pack is required for configuring any system)*

CC:Mail DOS 4.2/Win 2.0/Unix 1.0	$199/325/345
CC:Mail Macintosh 2.0/OS2 3.2	$329/345

User Packs: *(For adding users to the Platform Pack)*

CC:Mail 10/25/100 user v4.0	$229/549/2097

Remote Users: *(For connecting one remote user to any CC:Mail user net via Public Telephone Lines)*

CC:Mail Remote for DOS3.3 or Mac 2.01	$199

Gateways: *(For exchange of messages with other CC:Mail Post Offices on the same LAN or Bridged LANs)*

CC:Mail Router v4.0/Fax 1.2	$839/1298

PEER-TO-PEER NETWORKS

ASA

(2) copies of Novell Personal, (2) NE 2000, Cables, Terminators etc.	$169

WINDOWS FOR WORKGROUP

Add-On 1 user kit w/Win3.1	**$149**
Add-On 1 user w/o Win 3.1	**$48**
Multi-Unit 20 Node/Server	$734
Windows NT Advanced server	$949
Windows NT v3.1 regular	$329

ARTISOFT PRODUCTS

AE-2 Starter Kit v5.0 DOS/Win	**$454/525**
AE-3 Starter Kit v5.0 DOS/Win	**$525/545**
AE-2/3 16 BitAdapter w/lantastic soft	$192/234
Lantastic 2MBPS Kit 5.0	$339
Lantastic v5.0 AI Win 1/6/12pk	$93/549/1099
Lantastic 6.0 software only single user	$89
Lantastic 6.0 5 user soft pack	$335
Lantastic for TCP/IP	$199
Noderunner 2000C/T Eth. card 1/6pk	$174/975

Complete sub-system with dual hotswapable power supplies

FlexArray LX, a hardware based RAID, is a proven selection for all Sun SPARC, IBM RS/6000 and other servers running database packages and all other applications, specially servers sites for remote clients. Its simple installation and negligible system administration requirments has proven it to be a good selection for the Mac, IBN PS/2 and all other Intel based servers for Novell Netware, SCO, Microsoft NT ets. where a full-time network manager is not present.

On site service... 24 hours a day ...7 days a week

5 GB	10 GB	10 GB Barracuda
$7,795	$10,595	$11,295

For information please call Paul Gulati at (408) 496-6853 ext 208 or John at ext 211 anytime.

UPS'S

AMERICAN POWER

APC-BK 250 ,7 MION,386SX,WS	$99
APC-BK400,10MIN,286,386SX,WS	$158
APC-BK450	$209
APC-BK600,15 min,386/486 FS	$259
APC-BK900/12000,15min,Multi-FS	$367/487
Power doctor/Call UPS	$69/102

SMART UPS (ON-LINE/AUTO BACKUP)

APC 400, 10 min,286,386 FS/WS	$288
APC 600,15 min,386,486 FS/WS	$335
APC 900,15 min CAD/CAM WS/FS	$496
APC 1250,15 min,Multiple FSs	$613
APC 2000,20 min, Mini computers	$1095
Matrix UPS 3000 VA, Multi-server	$2869

INTERFACE KITS/SMART MONITORING

Power chute Plus for Novell/nix,Xen.	$64/98
UPS Monitoring board for Novell	$61

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Translated by Taku Fujita

Prices given in bold are usual stock items, prices not in bold are special order items and require a 20% deposit, are not returnable, and take 2-3 days lead time.

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2354 Calle Del Mundo
Santa Clara, CA 95054

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Local: (408) PCs - FOR - U
Fax: (408) 988-0359

Hours: M to F 9AM - 6:00PM
Sat: 11AM - 4PM

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SandalWood Center
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Fax: [510] 256-9983

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(408) 496 - 6853 Ex 211
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ASA (NJ): (717) 854 - 7473

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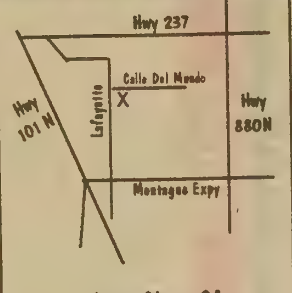

Santa Clara, CA

TERMS AND CONDITIONS

COD, FOB Santa Clara, CA. Credit terms are available on approval. Manufacturer's warranty on parts varies. Three years limited warranty on systems assembly labor only. Prices are subject to change. Prices in () or marked with a "*" are on cash basis only. Prices marked with "***" are clearance items & available while quantities last; regular prices for these items may be different.

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INTEL CPU CHIPS

• PENTIUM 60/66/90 MHz	$419/590/690
• 486DX-4 100 MHz	629
• 80486DX-33 MHz	209
• 80486DX-50 MHz	279
• 80486DX2-50 MHz	$209
• 80486DX2-66 MHz	249
• 80486SX-25 MHz	65
• 80486SX-33 MHz	85

A.M.D. CPU CHIPS

• 80486DX-40 MHz	$169
• 80486-2-50 MHz	199
• 80486-2-66 MHz	219

MEMORY UPGRADES - DUE TO THE RAPIDLY CHANGING PRICES CALL FOR THE LATEST PRICES!

SIMMS

IBM TYPE

1x9-60 3 Chip	$39
1x9-70 3 Chip	38
1x9-80 3 Chip	39
1x9-80/70/60 9 chip	39/40/41
1x9-10	32
4x8-70/80	119
4x9-70	135
4x9-80	128
4x9-60	136

MAC TYPE

1x8-100 8 Chip	$36
1x8-80 2 Chip	33
1x8-70 2 Chip	34
1x8-80/70 8 Chip	35
2x8-80/70	89
4x8-80/70	118/119
16x8-80/70	CALL
Mac IIfx 4/16 MB Kit	CALL
256K VRAM	CALL
512K VRAM	CALL
16/32/64/128MB Kits for Quadra 700/900 & Mac IIfx, ci	CALL
NEW 72 PIN SIMM for MAC LCII & CENTRIS	CALL

72 PIN SIMMS (36 BIT)

256Kx36-80/70	$49/52
512Kx36-80	89
512Kx36-70	92
1x36-70	149
1x36-60	149
2x36-80/70/60	269/299/305
4x36-80/70	530
8x36-70 NEW	1075

32 BIT SIMMS ALSO AVAILABLE

DRAMS

DRAMS

256x1-80	$2.00
256x1-100	2.00
256x1-120	2.00
256x4-70/80	4.99
64x4-80/100	3.00
1x4-80 DIPP	60
1MBx1-70	5.99
1MBx1-80/60	5.99
SOJ	CALL

ZIPPS

64x4-10/12 Page, 18pin	$6.00
256x4-80/70 Page, 20pin	7
256x4 Video Page 28pin TC524256Z-70	8
256x4 Video 28pin TC524256Z-60	8.50
1x4-80/70 Page 20pin ZIPP	24
1x4-80/70 Page 20pin DIPP	35

CACHE MEMORY

32Kx8-20	$3.99
32Kx8-15/12	4.99
64x4-20	5
64x4-15	5.50
8Kx8-20	2.75
8Kx8-15	3
16Kx4-20	2.75
16Kx4-15	3.50
64x1-20	6.75
64x1-15	8.50
128x8-20	25
128x8-25	24

MATH CO's

INTEL/CYRIX/ULSI

287-10	$29
8087-1/2/3	89/69/59
287XL Intel Tube	49
387SL Intel Tube	49
387SX-26/20/33	49
387SX-25 Cyrix	39
387SX-33 ULSI	34
387DX-20 Intel Tube	20
387DX-25 Intel Tube	28
387DX-33 Intel Tube	45
387DX-40 Cyrix/IIT	29
4167-25/33 Weitek	200/375

CALL FOR PRICING ON IIT, ULSI & WEITEK

LASER PRINTER MEMORY

Price includes Memory, Board & Installation Instructions

IBM LASER

4019/4019E 1/2/3.5 MB	$89/129/179
4029 (All Model) 4 MB	179

EPSON LASER

6000-2/4MB	$145/229
7000-1/2/3 MB	125/149/189
Action LaserII-2/3/5 MB	159/205/299

HP LASER

HPII/IID 2/4 MB Board	$135/219
HP 4/4M 4/8MB	149/245
HP IIP,IIP+,III,IIID,IIIP 1/2/3/4	75/135/155/220
IIsi 4/8 MB	179/299
DeskJet 500/500c 550C 256K	129
Design Jet Plotter 4 MB	155

PANASONIC LASER

KXP4410/KXP4430 1/2/3/4 MB	77/115/157/215
KXP4420/4450/4451 1/2/3/4 MB	68/110/135/220
KXP4450 1 MB	119
KXP4455 2 MB	139

OKI LASER

OL400 1/2 MB Board	$109/139
OL800/820 2/4 MB Board	129/189
OL810 2/3/4 MB Board	159/189/229

QMS LASER

PS 410 2/3/4 MB	$119/165/189
PS 860, 1700 1/4/8 MB	89/133/179
PS 815, 825, 815MR, 2/4/6	168/232/295

SHARP LASER

9500PS 1 MB	$75
JX-9500/9700 1/1.5/2.5/4	110/135/188/344

OTHERS

Apple Laserwriter II/IINT/IINTX 4 MB	$235
Brother HL-4 2/3/4 MB	119/165/189
Brother HL-8E V 1/2 MB	99/139
Compaq Pagemarq 15 & 20 1/4/8	79/139/266
Kyocera F800, F800Am F800T 2/4	95/137
NEC Silentwriter 90/290	109/124
NEC Silentwriter 95 2 MB	109
TI Microlaser 1 MB	98
Packard Bell Video Memory 1 MB	39

DELL MEMORY

Model		P/N	
433P,33P,325P,33D,325D			
	1 MB	310-2505	$89
	4 MB	310-2507	169
433TE, 425TE & Powerline Workstation			
	2 MB	310-2466	$129
	4 MB	310-2467	189
	8 MB	310-2468	349
	16 MB	310-2469	669
Power Desktop 486D, D/33, D/25, D/20, D/66			
	1 MB	310-2505	89
	4 MB	310-2507	169
	16 MB	310-2625	669
OTHER MODELS			CALL

MEMORY BOARDS

- RAMpAT 16 Bit........$85 • RAMpAT Plus 125
- SIMMply RAM for PS/1 16 Bit........149
- SIMMply RAM........159

TEAC FLOPPY DRIVES

1.44 MB	$39
1.2 MB	49
Dual Floppy 1.2/1.44	119
Heat Sink w/Fan For 486's/Pentium	10/18

COMPAQ MEMORY

Model		P/N	
LTE 286	1 MB	117081-001	$89
	2 MB	117081-002	125
	4 MB	117081-003	219
SLT 286	1/4 MB	110237-001	99/259
LTE 386S/20	2 MB	12125-001	129
	4 MB	121125-002	225
Contura Lite 20/25			
	2 MB	129769-001	125
	4 MB	129769-002	245
	8 MB	129769-003	395
Portable 386	1 MB	107651-001	125
	4 MB	107653-001	310
Portable III	2 MB	10-7332-001	125
	EBD	167811-001	225
SLT 386	2 MB	118304-001	135
	4 MB	118305-001	225
Deskpro 386S (E. Board)			
	4 MB	11364-001	285
	4 MB	112534-001	189
Deskpro 386/33L, 486/33L, 50/25			
	2 MB	115144-001	105
	8 MB	116561-001	365
	32 MB	116568-001	1475
Deskpro 386/20e, 25e (E. Board)			
	4 MB	113645-001	285
Deskpro 386/20,20e,25e			
	4 MB	113132-001	199
Deskpro 286N, 386N, 386SX/20, 386/25M, 486/33M, 486S/25M, 486S/16M			
	2 MB	118689-001	189
	4 MB	118690-001	345
	8 MB	128877-001	395
Deskpro 486/33L, 486/50L, 386/33L			CALL
Prolinea 3/255 & 3/252S			
	2 MB	141738-001	135
	8 MB	141742-001	315
Prolinea 4/33	2 MB	141682-001	125
	4 MB	141684-001	189
	8 MB	141685-001	345
Other Models			CALL

TOSHIBA MEMORY

T8500, T5200	2/8MB	$129/449
T5100, T3100, T1600	2 MB	139
T3100SX	2/4 MB	129/199
T3200SX, SXC	2/4 MB	125/199
T4400SX, SXC, T6400	2/4 MB	135/249
T4500/4600/4800, T1900/1910, T1950/C 3.3 Volts	8/16 MB	429/769
T3300SL	2/4/6 MB	135/210/299
T3100	2 MB	135
T2200SX, SXE, T1000LE	2/4/8MB	135/210/379
T1800 Satelite	2/4/8 MB	135/210/379

NEC MEMORY

Prospeed 286, 386SX/16	1/2/4 MB	$125/185/269
Prospeed 386	2/4 MB	189/475
Prospeed SX/20	1/4 MB	125/249
Powermate 386/25S	2/8MB	139/369
Powermate 486/25E, 486/33I	2/8 MB	135/365
Powermate Express Series	1/4/16 MB	135/225/689
Other Models		CALL

NOTEBOOK MEMORY

AMIGA 4000	4/8 MB	169/310
Altima LSX	2/4 MB	165/249
AST Premium Exec	1/4 MB	119/245
AST Power Exec 3/25	4/8/16 MB	CALL
Compaq Contura Lite 20/25	2/4/8 MB	135/245/395
Chaplet Notebook	2/4 MB	155/249
Chicony 386SX	4 MB	198
Chicony 386SL/25	2/4 MB	149/229
DECPC 320P	2/4/6 MB	195/269/389
DELL 320N &212N	1/2 MB	99/125
DELL 320N, NC	2 MB	139
DELL 325N, NC	2 MB	179
DELL NL25, NL20	2 MB	179
Epson NBS3	1/4 MB	98/225
Everex Tempo LX	2 MB	135
HP 95LX	1/2 MB	159/279
IBM L40SX, N33/SX	2/4/8 MB	99/189/389
IBM N51SX & SLC	1/4/8 MB	99/155/299
IBM PS/2 N45 Sl	2 MB	179
MAC PB 160, 180	6/10 MB	249/425
MAC PB 140, 170	2/4/6 MB	89/175/229
MAC PB 100	2/4/6 MB	89/179/239
Magnavox Metalis 386SX	4 MB	199
NEC Ultralite 286F	1/4 MB	99/199
Packard Bell 386SX	1/4 MB	99/229
Panasonic CF 170/270/370	1/2 MB	85/129
Sharp PC 8501	2 MB	125
Sharp 678/6881	2 MB	129
Sampo NB SX/26, SX/25	2/4 MB	145/225
TI Travelmate 2000	1 MB	129
TI Travelmate 3000	2 MB	135
TI Travelmate 4000	4 MB	229
Zenith Turbosport 386 E	1/4 MB	125/325
Zenith Supersport SX	2 MB	189
Zenith Mastersport	2 MB	189

IBM PS/2 & PS/1 MEMORY

PS/1 286/386SX	2/4 MB	$135/225
PS/1 Consultant Essential/Expert	1/2/4/8 MB	79/99/189/320
386 Valuepoint	2/4/8 MB	99/179/325
486 Valuepoint	4/16 MB	189/595
PS/2 30-286	2 MB	129
50Z, 55SX, 65SX, 70	2/4 MB	99/179
40SX, 35SX,35SL	2/4 MB	99/179
70A21, A61, 121	2 MB	135
80-11, 121, 311	4 MB	245
95,90,P75, PS/1 Pro	2/4/8 MB	135/129/335
16 Bit Exp Bd For 50, 50Z, 60, 65SX	0K	179
32 Bit Exp Board for all 70 & 80 models	0K	189
RISC 6000	16/32/64 MB	745/1490/2890
Other Models		CALL

AST MEMORY

Bravo 3/33(LC) 325S	2/8 MB	$120/325
Bravo 486/25 & 4/33	2/8 MB	135/345
Bravo 486LC	4/8/16 MB	189/325/595
Cupid-32 Board	0K	239
Premium 386C	4 MB	189
Premium SE 450	4 MB	189
Premium 386/25, SX,33,486/25	1 MB	85
Premium II 386, 486	1/4 MB	85/189
Executive Notebook	4 MB	189
Other Models		CALL

SUN MEMORY

SPARC SLC	4 MB	$189
3/60, 80, 4/40, 60, 65	4/16 MB	189/795
SPARC 1 &1+, 1Pc	4/16 MB	189/795
SPARC 10	16/64 MB	745/2375
SUN Classic	16 MB	745
SPARC Server 630np	64 MB	2285
SUN IPX, ELC	4/16 MB	189/825
SPARC II	16 MB	795
Other Models		CALL

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Desktops

Macintosh Classic	1MB Exp Board	M6361ll-A	CALL
	2MB Kit	M0219LL-A	CALL
Macintosh Color Classic	2MB Kit	M0219	CALL
Macintosh Classic II,LC,LCII	4MB Kit	N/A	CALL
	8MB Kit	N/A	CALL
Macintosh Plus, SE	2MB Kit	M0219LL-A	CALL
	4MB Kit	N/A	CALL
Macintosh II, IIx	4MB Kit	N/A	CALL
	16MB Kit	N/A	CALL
Macintosh IIFX	4MB Kit	N/A	CALL
Macintosh SE30	4MB Kit	N/A	CALL
	16MB Kit	N/A	CALL
Macintosh IIcx, IIvx IIvi	4MB Kit	N/A	CALL
	8MB Kit	M0513LL/A	CALL
	16 MB Kit	N/A	CALL
	32 MB Kit	N/A	CALL
	64 MB Kit	N/A	CALL
Macintosh IIci, IIsi	4MB Kit	M0292LL-A	CALL
	8MB Kit	M0513ll-A	CALL
	16MB Kit	N/A	CALL
	32 MB Kit	N/A	CALL
	64MB Kit	N/A	CALL
Macintosh LC III	4MB Module	N/A	CALL
LC475, LC520	8MB Module	N/A	CALL
	16MB Module	N/A	CALL
Performa 200	4MB Kit	N/A	CALL
	8MB Kit	N/A	CALL
Performa 400 Series	2MB Kit	M0219ll/A	CALL
405, 410, 430	4MB Kit	N/A	CALL
	8MB Kit	N/A	CALL
Performa 450,460,466,467	4MB Module	M15077LL/A	CALL
475, 476, 550	8MB Module	M1508LL/A	CALL
	16MB Module	N/A	CALL
	32MB Module	N/A	CALL
Performa 600	4MB Kit	MO292LL/A	CALL

Systems

Centris 610, 650	4MB Module	M1507LL/A	CALL
Quadra 610, 650	8MB Module	M1508LL/A	CALL
	16MB Module	N/A	CALL
Quadra 605/800	4MB Module	N/A	CALL
Quadra 840AV	8MB Module	N/A	CALL
	16MB Module	N/A	CALL
NEW!	32MB Module	N/A	CALL
Centris 660AV	8MB Module	N/A	CALL
Quadra 660AV	16MB Module	N/A	CALL
NEW!	32MB Module	N/A	CALL
Quadra 700, 900, 950	4MB Kit	M5952LL-A	CALL
		M0292LL-A	CALL
	16MB Kit	N/A	CALL
	32MB Kit	N/A	CALL
	64MB Kit	N/A	CALL
Workgroup Server 60	4MB Module	N/A	CALL
Workgroup Server 80	8MB Module	N/A	CALL
NEW!	16MB Module	N/A	CALL
Power Macintosh	8MB Module	(2)M1507LL/A	CALL
6100/60, 6100/60AV	16MB Module	M2838LL/A	CALL
7100/66, 7100/66AV	32MB Module	M2839LL/A	CALL
8100/80, 8100/80AV	64MB Module	N/A	CALL

Printers

PowerBook 100,140	2MB Card	M1032LL/A	CALL
	4MB Card	M1033LL/A	CALL
	6MB Card	N/A	CALL
PowerBook 145, 170	4MB Card	M4664LL/A	CALL
	6MB Card	N/A	CALL
PowerBook 145B	4MB Card	M4664LL/A	CALL
PowerBook 160, 165, 180	4MB Card	M4664LL/A	CALL
	6MB Card	M4664LL/A	CALL
	8MB Card	N/A	CALL
	10MB Card	N/A	CALL
PowerBook 165C, 180C	4MB Card	M4664LL/A	CALL
	6MB Card	N/A	CALL
	8MB Card	N/A	CALL
	10MB Card	N/A	CALL
PowerBook Duo 210, 230	4MB Card	M4184LL/A	CALL
	8MB Card	M4185LL/A	CALL
PowerBook Duo 250	4MB Card	M4184LL/A	CALL
NEW!	8MB Card	M4185LL/A	CALL
	20MB Card	N/A	CALL
PowerBook Duo 270C	4MB Card	M4184LL/A	CALL
NEW!	8MB Card	M4185LL/A	CALL
	20MB Card	N/A	CALL
	28MB Card	N/A	CALL
Newton Message Pad	1MB SRAM Card	H0028LL/A	CALL
NEW!	2MB SRAM Card	N/A	CALL
	4MB SRAM Card	N/A	CALL
	8MB SRAM Card	N/A	CALL
	16MB SRAM Card	N/A	CALL

Printers

LaserWriter II, IINTX IINTX-J	4MB Kit	M6006	CALL
LaserWriter IIf, IIg	4MB Kit	M5952LL/A	CALL
LaserWriter Pro 600,630	4MB Module	N/A	CALL
	16MB Module	N/A	CALL
LaserWriter Select 310,360	1MB Module	M2093G/A	CALL
	4MB Module	M2094G/A	CALL
LaserWriter Pro 810	4MB Board	M1442G/A	CALL
NEW!	8MB Board	M1443G/A	CALL

AST

Desktops

286 Rampage Plus	0MB Exp Board	N/A	CALL
Advantage Plus 486 Series	4MB Kit	500510-008	CALL
486DX/33	4MB Kit	501168-001	CALL
486DX2-50	8MB Kit	500824-001	CALL
486DX2-66		5001168-002	CALL
Advantage 386SX/20.25	2MB Kit	500962-001	CALL
Advantage Pro 386SX/25	500891-005	CALL	
	8MB Kit	500962-002	CALL
		500891-006	CALL
Advantage Pro	2MB Kit	500987-001	CALL
486DX/33		500891-007	CALL
486SX/25	4MB Module	500987-002	CALL
		500891-008	CALL
	8MB Module	500987-003	CALL
	16MB Module	500987-004	CALL
	32MB Kit	500987-005	CALL
Bravo 286/8,386SX/16	2MB Kit	500510-002	CALL
		500710-004	CALL
Bravo 286/16,386SX/20	2MB Kit	500510-002	CALL
386SX/25 (2,8MB only)	500710-004	CALL	
	8MB Kit	500824-001	CALL
		501168-002	CALL
Bravo LC4/25s	2MB Kit	500987-001	CALL
4/33		500891-007	CALL
4/33s	4MB Module	500987-002	CALL
4/50d	500891-008	CALL	
4/66d	8MB Kit	500987-003	CALL
Bravo 486 LP Series	16MB Module	500987-004	CALL
Bravo 486/66 MT	32MB Kit	500987-005	CALL
Premium 386C (4MB only)	4MB Kit	500510-008	CALL
		501168-001	CALL

Desktops

Premmia 4/33, 4/33s	4MB Kit	501159-001	CALL
4/50d, 4/66d	8MB Kit	501159-003	CALL
	16MB Kit	501159-004	CALL
	32MB Kit	501159-004	CALL
	64MB Kit	501159-005	CALL

Notebooks

PowerExec 4/25SL	4MB Module	501166-001	CALL
color, ColorPlus	16MB Module	501166-003	CALL
PowerExec 486	4MB Module	501318-001	CALL
color, ColorPlus	16MB Module	501318-002	CALL
PowerExec 486	4MB Module	500984-003	CALL
Special Edition	16MB Module	500984-003	CALL
PowerExec 3/33,3/25SL	2MB Module	500984-004	CALL
PowerExec EL	4MB Module	500984-001	CALL
	8MB Module	500984-002	CALL
	16MB Module	500984-003	CALL

PremiumExec

	1MB Module	500814-001	CALL
286/12	4MB Module	500814-003	CALL
386sx/20		500814-004	CALL
386SX/25 (4MBonly)			
386SX/25C (4MB only)			

AT&T

Printers

AT&T 593	0MB Exp Board	N/A	CALL
	2MB Exp Board	N/A	CALL
	4MB Exp Board	N/A	CALL
	4MB Exp Board	N/A	CALL

BROTHER

Printers

HL-4,4PS,4V,4Ve	0MB Board	N/A	CALL
	1MB Exp Board	MB-410	CALL
	2MB Exp Board	MB-420	CALL
	4MB Board	MB-440	CALL
HL-6 Series	0MB Exp Board	MB-600	CALL
NEW!	2MB Exp Board	N/A	CALL
	4MB Exp Board	N/A	CALL
HL-8,8e,8v	0MB Exp Board	N/A	CALL
	1MB Exp Board	MB-810	CALL
	2MB Board	MB-820	CALL
HL-10V,10DV	2MB Exp Board	MB-1020	CALL
10PS, 10DPS	4MB Board	MB-1040	CALL
HL-10H	1MB Module	MS-1	CALL
NEW!	2MB Module	MS-2	CALL
	4MB Module	MS-4	CALL
	8MB Module	MS-8	CALL
	8MB Module	MS-8	CALL

CANON

Notebooks

NoteJet 486	2MB Module	N/A	CALL
(BN-22)	4MB Module	N/A	CALL
NEW!	8MB Module	N/A	CALL

Printers

LBP-4, 4 Plus, 4 Lite	1MB Exp Board	S63-2230	CALL
	2MB Board	N/A	CALL
LBP-4sx	0MB Exp Board	N/A	CALL
	1MB Exp Board	R03-0010-000	CALL
	2MB Board	R03-0020-000	CALL
LBP-8II,8IIR, 8IIT	0MB Board	N/A	CALL
	0MB Board	N/A	CALL
	1MB Exp Board	S63-1300	CALL
	2MB Exp Board	S63-1880	CALL
	4MB Board	N/A	CALL
LPB-8SX	0MB Exp Board	N/A	CALL
	1MB Exp Board	R03-0030-000	CALL
	2MB Board	N/A	CALL
LBP-8III,8III,8IIIR	1MB Exp Board	S63-2340	CALL
	2MB Exp Board	S63-2350	CALL
	3MB Board	S63-2360	CALL
LBP-8IV,LBP-4U	1MB Module	N/A	CALL
	4MB Module	N/A	CALL
	8MB Module	N/A	CALL
LBP-430	1MB Module	R73-3009001	CALL
	4MB Module	R73-3017001	CALL
LBP-860	1MB Module	N/A	CALL
NEW!	2MB Module	N/A	CALL
	4MB Module	N/A	CALL
	8MB Module	N/A	CALL
	16MB Module	N/A	CALL
	32MB Module	N/A	CALL

C.ITOH

Printers

C1-4,4Plus,8E	1MB Kit	CI4MD-1M	CALL
CI-6	0MB Exp Board	N/A	CALL
	2MB Exp Board	N/A	CALL
	4MB Board	N/A	CALL
CI-8	1MB Module	CI8MD-1M	CALL
	2MB Module	CI8MD-2M	CALL

COMPAQ

Desktops

DeskPro 286e	1MB Module	113131-001	CALL
386/20,20e,25,25e	4MB Module	113132-001	CALL
	4-12MB Exp Board	113645-001	CALL
DeskPro286N	0MB Exp Board	118700-001	CALL
	1MB Module	118688-001	CALL
	4MB Module	118690-001	CALL
DeskPro 386s	1MB Card	113646-001	CALL
	4MB Card	112534-001	CALL
	4-12 MB Exp Board	113634-001	CALL
DeskPro 386/16	4-8MB Exp Board	108070-001	CALL
DeskPro 386s/20	1MB Module	118688-001	CALL
	2MB Module	118689-001	CALL
	4MB Module	118690-001	CALL
DeskPro386N,386s/20N	0MB Exp Board	118700-001	CALL
	1MB Module	118688-001	CALL
	2MB Module	118689-001	CALL
	4MB Module	118690-001	CALL
DeskPro i Series	1MB Module	118688-001	CALL
SystemPro/LT 486/33	2MB Module	118689-001	CALL
	4MB Module	118690-001	CALL
	8MB Module	128877-001	CALL
		128877-002	CALL
Prosignia PC Server 486/33	1MB Module	118688-001	CALL
486DX2-66	2MB Module	118689-001	CALL
	4MB Module	118690-001	CALL
	8MB Module	128877-001	CALL
		128877-002	CALL
	16MB Module	149320-001	CALL
	32MB Module	149147-001	CALL
Deskpro 386/25m,386/33M	0MB Board	129160-001	CALL
486s/16M,486s/25M,486/33M	1MB Module	118688-001	CALL
486DX2/50M,486DX2/66M	2MB Module	118689-001	CALL
SystemPro/LT 386/25,386/33	4MB Module	118690-001	CALL
486DX2/50,486SX/25	8MB Module	128877-001	CALL
Deskpro 5/60M,5/66M	16MB Module	149949-001	CALL
Deskpro XE 560	16MB Kit	149949-001	CALL
NEW!	32MB Kit	149912-001	CALL
	64MB Kit	149912-001	CALL
	128MB Kit	149914-001	CALL
Deskpro 386/33L,486/33L	2MB Card	115144-001	CALL
Deskpro 486/25,486/50L	8MB Card	116561-001	CALL
Systempro 386/33,486/33	32MB Card	116568-001	CALL
486/33-1020e,486/33IE			
486/33-2040e,486/33-680e			
Deskpro XE 433s,XE 450	2MB Module	118689-001	CALL
XE 466		141683-001	CALL
	4MB Module	118690-001	CALL
		141684-001	CALL
	8MB Module	128877-001	CALL
		141685-001	CALL
Prolinea 3/25S,3/25ZS	2MB Kit	141738-001	CALL
	8MB Kit	141742-001	CALL
Prolinea 4/25S,4/33,4/50	1MB Module	141682-001	CALL
4/66,CDS, NET/25s	2MB Module	141683-001	CALL
Net/25tr,Net/25e	4MB Module	141684-001	CALL
Presario 400 Series	8MB Module	141685-001	CALL
Presario 600 Series	1MB Module	141682-001	CALL
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	4MB Module	141684-001	CALL
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Presario 800 series	2MB Module	141833-001	CALL
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Systempro/XL	16MB Kit	139132-003	CALL
Prosignia 5/60	136816-001	CALL	
NEW!	32MB Kit	139132-004	CALL
		136817-001	CALL
	64MB Kit	139130-001	CALL
		139132-005	CALL
	128MB Kit	139918-001	CALL
		139132-007	CALL
ProLiant 1000 486DX2/66	4MB Module	141684-001	CALL
Prosignia VS		118690-001	CALL
	8MB Module	128877-001	CALL
		128877-002	CALL
		141685-001	CALL
	16MB Module	149320-001	CALL
		190747-001	CALL
	32MB Module	149147-001	CALL
		190748-001	CALL
ProLiant 1000 5/60	16MB Kit	136816-001	CALL
ProLiant 2000 Family		149949-001	CALL
ProLiant 4000 Family	32MB Kit	136817-001	CALL
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	64MB Kit	149341-001	CALL
		149913-001	CALL
	128MB Kit	139918-001	CALL
		149914-001	CALL

Notebooks

Contura 3/20,3/25,3/25C	2MB Card	139497-001	CALL
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Contura 4/25,CX,EX	4MB Card	146520-001	CALL
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Pagemarq 15 (4/8/16MB)	2MB Kit	126359-001	CALL
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	4MB Card	N/A	CALL
LZR 960,965	4MB Board	N/A	CALL
LZR 1560,2060N	4MB Board	N/A	CALL

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Desktops

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DECpc425i	2MB Kit	PC6XM-CD	CALL
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DECpc LPv,LPx,MT	4MB Module	FR-PC7M-AA	CALL
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DECpc AXP 150	16MB Kit	PB2MA-BD	CALL
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DECpcDT	4MB Module	PC6XM-EA	CALL
	16MB Module	PC6XM-EB	CALL
	32MB Module	N/A	CALL
	64MB Module	FR-PCT7M-AA	CALL
DECpcST 425ST, 450ST	4MB Module	FR-PCTAM-CC	CALL
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CALL			
	16MB Module	FR-PCTAM-CE	CALL
DECpcXL 433dx	8MB Kit	FR-PC77M-AA	CALL
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	64MB Kit	N/A	CALL
Performance ME Series	4MB Module	310-3334	CALL
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	16MB Module	310-3336	CALL
	32MB Module	310-3337	CALL
PowerLine Workstations	2MB Kit	310-2466	CALL
DE, SE Series	4MB Kit	310-2467	CALL
NEW!	8MB Kit	310-2468	CALL
	16MB Kit	310-2469	CALL
	32MB Kit	310-2630	CALL
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	4MB Kit	310-2467	CALL
	8MB Kit	310-2468	CALL
	16MB Kit	310-2469	CALL

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EPL-7000	0MB Exp Board	N/A	CALL
	1MB Exp Board	C822031	CALL
	2MB Exp Board	C822011	CALL
	3MB Exp Board	C829042	CALL
ActionLaser II	1MB Exp Board	N/A	CALL
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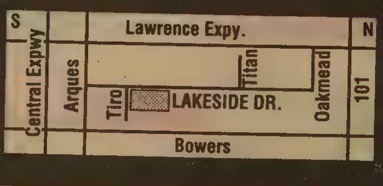

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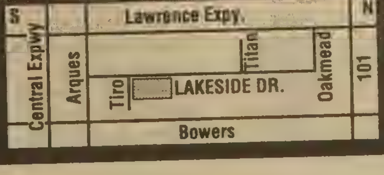

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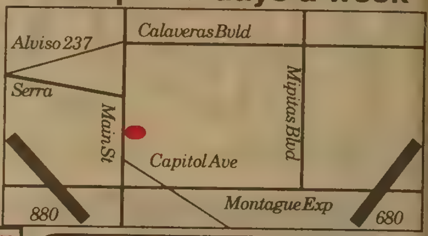

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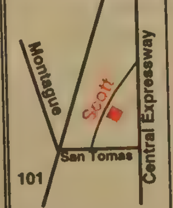

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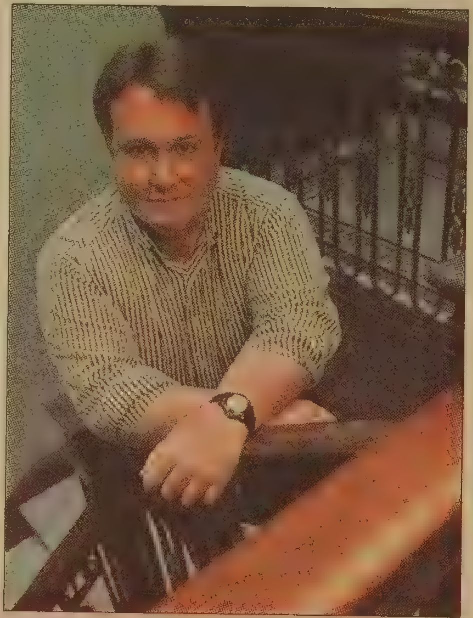
CENSORSHIP ON THE NET

EFF Staff Counsel Mike Godwin On Legal (And Other) Issues

By Mary Eisenhart • Photo By Susan Muniak



"Freedom of the press," said A.J. Liebling in one of the most oft-repeated quotes of the computer age, "belongs to those who own one." Desktop publishing and, more recently, the explosive growth of the Internet have enabled a degree of self-expression and controversy undreamed-of in the barely post-Gutenberg era of the Founding Fathers.

The recent obscenity prosecution of Robert and Carleen Thomas, sysops of the Milpitas-based Amateur Action BBS (self-described as "the nastiest place on earth"), as a result of files downloaded in Tennessee has reopened debate on the censorship issue—who can and should set the standards for what others say and do online?

Criminal prosecutions for content, from the notorious E911 document of a few years ago to the ubiquitous mega-X-rated graphics, are just part of the story. Equally controversial to some online constituencies are, for instance, America Online's policy of not allowing the Seven Forbidden Words (and most of their synonyms) to be posted online, and Prodigy's practice of screening responses before they're posted. At the same time the Thomases were making headlines, there was a mini-tempest on Usenet as the Unitarians tried to start their own newsgroup and encountered loud opposition from some self-proclaimed Christians who denied the right of "heretics" to virtual assembly.

In an attempt to clarify some of the issues and cut through some of the hysteria that surrounds them, we sat down for an extended discussion with attorney Mike Godwin. Godwin, a frequent speaker on legal issues relating to cyberspace, is a longtime veteran of the online world and presently serves as staff counsel for the Electronic Frontier Foundation.

Let's start with some groundwork. What are the legally recognized limitations to the First Amendment?

The way to understand the First Amendment is that it creates a presumption that anything that you say or that you write can't be barred, can't be punished, can't be limited by government. There are various carveouts that represent accommodations the Supreme Court has tried to strike between First Amendment interests and other social interests.

For example, libel comes to mind. With libel, we have the courts recognizing that there's an interest in protecting people's reputations, and that this interest may come in conflict with the interest of protecting a free press and freedom of speech.

Libel is necessarily a false statement?

Yes. Libel is a false statement that tends to damage the reputation of another. Of a living person, by the way.

Obscenity is another exception. The court has wrangled many times in the 20th century with the issue of obscenity. If you'll recall, there were many cases in the '50s and '60s in which people were prosecuted for obscenity, for things that we would not think of as obscene today—for example, Lenny Bruce's monologues.

James Joyce's Ulysses.

That's right. *Ulysses* is a very good example.

With Bruce's monologues there was never any realistic chance that anyone would ever be sexually aroused by one of them. He used profanity, he talked about sex, sometimes in very graphic ways. He talked about these things in ways that many people found offensive.

In the '50s and '60s you saw the Supreme Court trying to find a way to strike a balance between what was acceptable and protected by the First Amendment and what was not. What you found was that they were unhappy with any formulation prior to the early '70s.

The test for a while was whether there was any redeeming social value to the work.

Which is indefinable.

That's right. A court would make that determination.

But what happened was, of course, that people would publish magazines of even the hardest-core pornography, in which they would include short little essays explaining how this stuff was good for you, how it was good to free your fantasy life, and so on.

And the Supreme Court never liked that very much. [*laughs*]

In the early '70s, the Supreme Court justices were making individualized determinations as to whether films were obscene. So they actually had a screening room in the Supreme Court. Every time a movie like *I Am Curious: Yellow* would come before the court, they'd go screen it; and the justices would make an individual determination as to whether it was obscene or not.

Chief Justice Warren Burger, who'd been appointed by Richard Nixon, hated that practice.

Because he didn't like having to watch the movies?

On the one hand, he didn't like pornography. On the other, he thought it was demeaning to the institution of the Supreme Court for everybody to be viewing these dirty movies.

It was very interesting. There were some justices who wouldn't see the films because they didn't want to view dirty pictures, and they would vote for upholding the conviction. And then there were Justices Douglas and Black, who wouldn't view the movies because they held, as a matter of principle, that the First Amendment should just allow them. So they didn't need to see the films to know that they were going to vote to allow them.

It was all the justices in the middle who would go see the films.

Is there a legal definition for pornography?

No. There's not a legal definition of pornography. Many people get confused on this; they hear about pornography and obscenity, and they think that pornography and obscenity are the same thing.

Pornography is essentially artistic work or writing that's designed to be sexually arousing. But not all of that stuff is obscene. For example, many people find the pornographic works of Anne Rice arousing, but they're not obscene. There's no question that they wouldn't qualify as obscenity.

So what is the legal definition of obscenity?

Obscenity, according to the Supreme Court, occurs when certain things happen.

One of them is that your state has to have passed an obscenity statute in which it defines with specificity what kinds of sexual acts are barred. In fact, one of the amusing outcomes of that practice is that we now have detailed descriptions of various kinds of sexual acts in state statutes around the land. You can imagine the legislatures dealing with these issues.

The second thing is that the jury at a trial has to make a determination as to whether the work which depicts those sexual acts appeals to the prurient interest, as a "reasonable man" applying the contemporary community standards would interpret it. Prurient interest just basically means that it's arousing.

It has to depict that stuff in what's called a patently offensive manner.

Which of course is completely subjective?

Well, supposedly a juror would not apply his own standards, but would apply the reasonable community standards. As a practical matter, no one knows what jurors apply.

So it's obscene if it depicts, in a patently offensive way, sexual acts specifically described by state law, in a manner designed to appeal to the prurient interest,

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as judged by a reasonable man applying the contemporary community standards.

The first part is statutes; the second part is community standards. But even if it flunks Test 1 and Test 2, Test 3 is that there's got to be an absence of significant literary, social, artistic, political or other value to the work.

So you might have a work that was actually very graphic, and depicted a graphic sexual act, and it might also be designed to be arousing, but if the work as a whole had serious literary, artistic, or social value, it would be not obscene.

Now of course we can imagine many communities in which the kind of hard-core pornography that one can find in California or New York state would fail all three tests.

Let's address the community standards issue. What is the legal formulation of "community standards"?

There isn't really a further definition of it that has any meaning. Community standards, as defense lawyers will always tell you, is what twelve jurors think.

So to take the situation of the Amateur Action board, which is rather more complex than popularly thought. Consider, for example, the type of download that some guy on the WELL characterized as "Bubbles and her Shetland pony demonstrating the client/server relationship." Realistically speaking, where does that fit in with community standards? It does not appear to me that the average person in Milpitas would find it any more acceptable than the average person in Kansas.

Well, that's true. But on the other hand I think that a jury in Milpitas probably won't convict. Not because they think it meets community standards, but because there's a widespread attitude in California that pornography should not be banned, and that the police should be up to other things than shutting down pornography distributors.

It's always hard to second-guess what the juries are doing. Some people would say that is community standards in action.

The Statement by Amateur Action's attorney that the case would never come to trial in California has been called into question; in fact the San Jose police department has been quite interested in this board for a while.

But why didn't they prosecute? They could have set up a case a long time ago. There's a very strong sentiment in California to leave people alone.

Moving from garden variety pornography to a different legal category, what is child pornography?

It's very important that people think clearly about this, because child pornography is a wholly separate legal category from obscenity. For one thing, there's no community standards that allow child pornography. It's a federal crime, and you can't escape liability by appealing to community standards, and you can't escape liability by appealing to the notion of significant social value.

So if the mayor of your town is the president of NAMBLA, that still doesn't count.

Right. It doesn't save you. It doesn't save you if the work might have some genuine literary, artistic value.

Just for the record, what is the legal definition of child pornography?

The federal statute specifies that it is the visual depiction of a child engaged in sexual or lewd and lascivious conduct. A real child has to be used in the manufacture of that material.

So, for example, photographs like Jock Sturges's photographs of young girls on nude beaches in France would not qualify as child pornography, because they weren't engaging in sexual activity or in lewd and lascivious conduct.

This didn't keep Sturges from getting into a whole lot of legal difficulty a few years ago though.

Well, that's right. But he was ultimately vindicated.

At great personal cost.

We always have to distinguish discussions of what the law says from discussions of whether it's tough to get prosecuted. There's no question that Lenny Bruce's material was not obscene, but that doesn't mean he didn't have to go to court a lot of times to vindicate himself, or that he wasn't in fact convicted in lower level courts. He was.

It's one of the hard things for people who are not lawyers to grasp—even if the law is on your side, that doesn't mean that you're not at risk.

Another example of material that many people think would be child pornography, but isn't, would be a computer-generated image of children engaging in sexual activity, images in which children had not been used. Or any textual material describing sexual activity of children. It might be obscene, and it certainly might be offensive, but what it is definitely not is child pornography.

Similarly, taking a photo of an adult porn star and morphing it down to her seven-year-old self doesn't qualify?

Right.

If I remember correctly, though, there have been successful child pornography prosecutions for use of underwear ads from the Sears catalog in another magazine.

There's a case having to do with the use of pictures of children where the children are clothed; the issue in his case was whether the lewdness and lasciviousness part was on the part of the viewer. As I recall it, the defendant was ultimately acquitted. The law was construed as requiring lewdness and lasciuiousness in the image itself.

This raises kind of the same issues as something on Amateur Action—the fact that amid "child-sex" images that turn out to use adult models are non-sexual nude family photos taken at nude beaches, which take on a whole different meaning in that context.

It is rather similar, and I think we're going to see how that falls out in the Utah case. I haven't seen the indictment, but what I have been told is that the Thomases have been indicted in Utah on child pornography related counts.

To the best of your knowledge, the indictment is based on photos that, in another context, would not be considered child pornography?

That's correct.

Assuming for the sake of argument that the people in that photo did not consent to have their likenesses used in this manner, which strikes me as extremely likely in many cases, what recourse do they have? And how are their rights balanced against the First Amendment?

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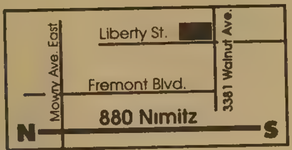

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CENSORSHIP

continued

They have no recourse through the criminal justice system at all. They'd have a civil claim, perhaps, of invasion of privacy against the people who reproduced the image. But you have to remember that even though the people at nudist colonies are not consenting to have their images circulated on pornography-oriented bulletin board systems, it does undercut a claim of invasion of privacy that they did voluntarily have those shots taken.

Okay, for another example—you have a baby daughter. I expect that like all parents I've ever met, you have naked baby pictures of your daughter. Suppose one of your political enemies somehow obtains one of these photos and uploads it in such a context across the net. What recourse do you have?

Well, I might again have an invasion of privacy claim, for appropriation of my daughter's image. But there would be no criminal recourse, normally.

Except for a possible criminal copyright violation, since presumably we're the copyright holders of pictures of our little girl.

Playboy has been quite assiduous in prosecuting, on intellectual property grounds, people who scan and upload their centerfolds. Is that a separate issue? That gets lumped under "censorship" too, which is kind of funny.

Well, the subjects of censorship and intellectual property do intersect, though not always in a very simple way. There is a criminal action related to criminal infringement of copyright when individuals take images and resell them without the permission of the copyright holder. In that sense, there could be a criminal action.

But it's far more likely that *Playboy* will proceed as it has proceeded in the past, by pursuing civil remedies.

Going back to the issue of Amateur Action being prosecuted in Memphis, and the issue of community standards in cyberspace—address that issue a bit.

I think there are really two issues that are raised concerning community standards by this Memphis BBS prosecution. The first one is whether it makes sense to apply community standards at all. We increasingly have communities that are not defined by the accident of geographic location. Maybe it doesn't make sense to try and apply the community standards doctrine anymore, at least in this context.

But the other approach to the issue is to say, "Look, even if we think that community standards are a good thing, here's a case in which community standards have been applied inappropriately." I would argue it this way.

In the past, pornography producers have been prosecuted in remote jurisdictions when they have mailed or broadcast materials into those jurisdictions. Part of the reason jurisdiction was upheld in those cases is that they have committed a conscious act to have an effect in a remote jurisdiction.

The bulletin board case is rather different. When we're talking about the downloading of images; we're normally talking about an automated system that responds to anyone who's a member, who dials up and chooses to instruct the software to make the transmission. That could happen when the sysop is engaged in dream sleep. So there's a real question as to whether it makes sense to prosecute the sysop for committing a conscious criminal act for something his computer did.

But on the other hand he consciously set up the BBS to disgorge software on demand.

Well, but it's perfectly legal to disgorge software on demand where he is. He set it up for a perfectly legal purpose. If he set it up to only accept phone calls

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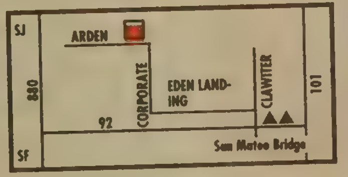

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from Tennessee, or only accepted members from Tennessee, then I think you'd have a tougher case. But that's not what he did.

Taking it further, as communications become more global, what about somebody dialing in from Singapore or some other country where this kind of content is illegal?

Remember, community standards is an American approach to obscenity issues, and it may well be that the laws of foreign jurisdictions don't pay any attention to community standards. If somebody dials in from Singapore and downloads pornographic images from a bulletin board in the United States, it's at least theoretically possible that Singapore's criminal laws would thereby be violated. But I doubt that the United States would extradite the sysop in that particular case.

A similar situation might arise from somebody in Iran downloading a copy of The Satanic Verses from some site.

I love that example because I invented that example.

The United States will normally extradite with countries that it has extradition treaties with, in cases where it doesn't violate due process for American citizens. Normally, even if there were an extradition treaty with a fundamentalist Islamic country, the United States would not extradite somebody who had committed a religious crime.

So the student at the University of Tehran telnets to some server in a country where Satanic Verses is legal and downloads it—he's still at risk from Iranian law, but is anyone in the country where the server is located at risk?

I'd say the risk is minimal and perhaps nonexistent. Publishing *Satanic Verses* was perfectly legal in every country in which it was published.

As the net becomes more global, you're going to have more and more messages flying around that are highly illegal in some countries and just fine in others. Suppose someone out of the country starts posting detailed death threats to Clinton on newsgroups widely read in the US?

In the United States, it's important to recognize that the mere advocacy of illegal activity is protected by the First Amendment. There's a case called *Brandenburg vs. Ohio* from the late '60s in which that was established. Whereas speech that causes a riot, that causes what's called "imminent lawless action," and is designed to cause such action, can be banned or punished.

But that standard gives a lot of leeway for people to advocate illegal activity, and it's unlikely that the United States legal system would ever extradite anyone for advocating illegal activity in other countries, and it's unlikely that the United States would ever try to punish anyone in a foreign country who merely advocated illegal activity here.

Take the situation analogous to what we encountered with the E911 document; suppose a US board is carrying a newsgroup in which foreign residents are actively plotting to, say, blow up the World Trade Center. Is the sysop of that board at risk from US law for carrying the content? What if they're doing it in email?

He's certainly not at risk unless he knows about the conspiracy. He can't be held liable unless he knows about the conspiracy and is either a co-conspirator or is acting in a way that aids and abets the crime. That normally involves knowledge.

So things that occur in private mail or mailing lists that you don't read on

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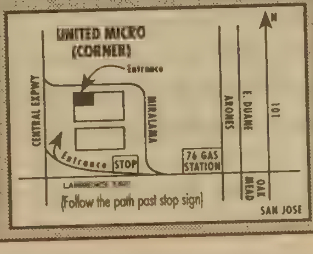

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your system are normally things that you will not be held criminally liable for. That doesn't mean that your system may not be seized, or some material on your system may not be seized as evidence. That can still happen regardless of the fact that you're not a target of a criminal prosecution. But it does mean that you're not going to be found guilty of committing a crime merely because something happened on a system that you own, absent criminal intent.

Are there any other instances of government censorship of content that do not involve obscenity or libel?

I think the computer crime cases and computer searches and seizures that we were seeing in the late '80s and early '90s reflect some government disturbance about people sharing information on how to bust computer security, how to engage in telephone fraud, long distance code trading, and credit card number trading, and so on.

Where does that stand at this point?

I think there's a consensus that the sharing of how-to information is protected by the First Amendment, but the actual trading in codes and card numbers is not protected.

Just as it's been upheld that you can print instructions on how to build an atomic bomb, but you'd be on thin legal ice if you detonated one.

That's right. Or if you built one.

Going into the considerably murkier waters of non-government censorship, let's take the case of Canter & Siegel and the ensuing cancelbots.

Basically you had two lawyers in Arizona who were admitted to the Tennessee bar but who were practicing immigration law, who sent an ad for their services to almost every newsgroup in Usenet, regardless of the appropriateness or lack of appropriateness of the content.

Well, most people on Usenet were very upset by this, but Canter & Siegel were unrepentant and they said they were going to do it again. So a number of people on the net forged cancellations of their messages.

How does that work?

Usenet has a newsgroup in it called the control newsgroup, and commands having to do with cancellation of messages are posted there, as postings to that Usenet newsgroup. Normally if you cancel your own message on Usenet, you have in effect posted a cancellation to the control newsgroup, and that cancellation message propagates out to the net in the same way your original message did.

Well, once you know this, it's trivial to forge a cancellation message to make it look like the originator of the message is trying to cancel it.

Does this then nuke all messages coming from this source?

It will go after particular messages, normally. A control message won't kill everything by a particular person, but it will kill a particular message.

So people did this in order to kill particular messages from Canter & Siegel, and some people even automated the process to the point of forging cancellations for any messages that appeared from Canter & Siegel.

And one person who did this did it from abroad, and when people complained to him "What about the First Amendment?", he quite appropriately responded that he's not bound by the First Amendment. He lives in Norway.

But is the First Amendment applicable at all, because this is not a government agency?

Right. Strictly speaking the First Amendment is not applicable at all. Loosely speaking, people often say "First Amendment" and use those words to invoke the general principle of freedom of expression, which I think most people believe does apply both to private individuals and to governmental entities.

Yeah, but do the courts hold that?

No, of course not. It's a philosophical invocation.

So there is no legal reason why someone couldn't cancel Canter & Siegel postings indefinitely?

To my knowledge there is no legal barrier, within or without the United States, to the forging of cancellation messages.

First of all, it's important to distinguish cancellation messages from so-called cancelbots. Cancellation messages are individualized. A person normally makes a conscious decision to send a cancellation message.

A cancelbot is a bit of software that generates cancellation messages, but there are upper limits to what cancelbots can do. A cancelbot could certainly delete everything posted by a particular user, but it couldn't be expected to look for particular content. It could look for particular words, but it couldn't look for particular content.

So for example, there's an infinity of messages that could be written critical of Islamic fundamentalism. But no cancelbot could ever pick those messages out. What could happen is that someone could say, "Mike Godwin's posting messages critical of Islamic fundamentalism," and then somebody might do a cancelbot to cancel every posting from me.

Is there any legal guarantee of an audience? Is there a legal guarantee of distribution?

Absolutely not. There is no law that requires that people be heard.

Does the issue come up under contract law, like within a user agreement of a particular system, that would govern this sort of thing?

Perhaps, but even that would be of limited value. If you're on AOL and you post a message to Usenet, you may have a contract with the management of AOL forbidding them from canceling your postings. But that doesn't mean that someone who's not party to the contract couldn't cancel it.

Yeah, and in fact when AOL's Internet gateway first opened, a lot of their users were so culturally clueless about the net that some newsgroups and mailing lists automatically canceled anything that originated from AOL for a while. And there was great whining about "censorship" for that.

That's right, and I don't think the whining was wholly unjustified. There are certainly people who had worthwhile things to say, and they sent their post from AOL and they were shut up.

But they had no legal standing for their complaint?

To my knowledge, they don't.

So what about the recent situation where the Unitarians wanted to start a newsgroup and a group of fundamentalist Christians launched a campaign to deny their request on the grounds that they were heretics?

There is a voting procedure on Usenet for the establishment of newsgroups within the normal hierarchies, the non-alt hierarchies. And there's an attempt

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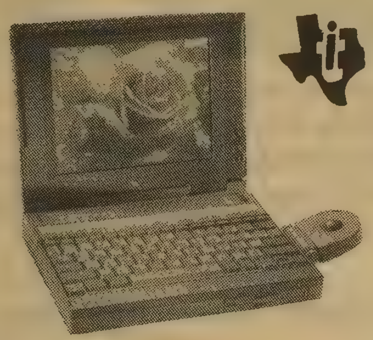

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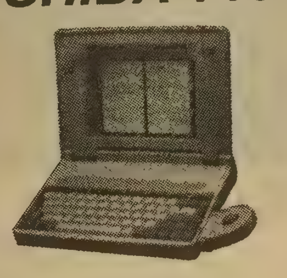

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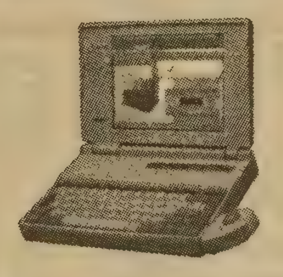

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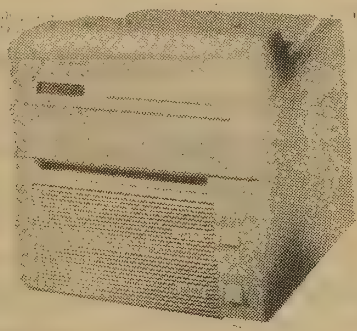

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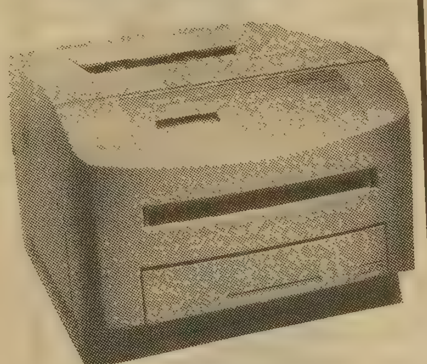

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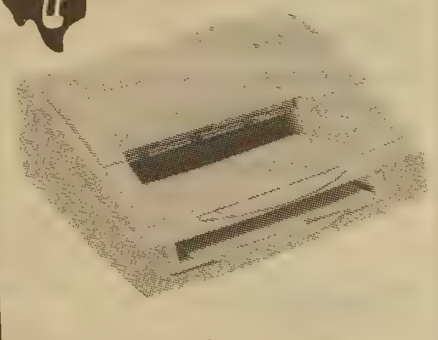

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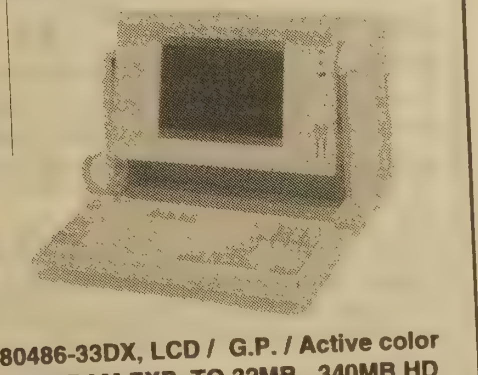

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CENSORSHIP

continued

to create a Unitarian newsgroup. The process is open, so it's perfectly possible for people who don't want that newsgroup to appear to vote against it, or to encourage other people to vote against it. While some might find that troubling, I don't find it disturbing at all. It's democracy, and it's meant to be a democratic process.

But democracy on the net has an entirely different legal status from in the USA.

Well, so?

There's a philosophical versus a legal setting, and I think the reader who's new to this needs to know the distinction.

I think that in the common sense of democracy, which is people voting for what they want, it's democratic.

So who gets to decide what you see on the net?

As a practical matter, anyone can decide. It's a measure of the robustness of Usenet, that everyone has the capability, potentially, of forging cancellation messages, but few people do. I think everyone recognizes at some level that if they abuse that power, Usenet's value would vanish, and nobody wants to do that.

A lot of people get bent out of shape about "censorship" over things like the AOL user agreement saying you can't use swear words, or Prodigy pre-screening responses.

I have two thoughts about that. The first is that I fully support the right of any private or commercial service to set the terms of how they want users to interact on that service. I think that much of the value of an online service is in its character, and the providers should have a lot of autonomy in determining the character of the service. If Prodigy wants to be the Disney Channel of online services, there may well be a market for that kind of service, and I believe that they have a right to try and reach that market, and to ensure that they have the kind of character they want through user agreements and through software that screens out profanity, and so on.

But at the same time I think that what people find very liberating about this medium is the fact that people can speak freely, without having any kind of intermediate editor changing their words. I think that's what individual users tend to want from this medium, and I think that in the long run the services that turn out to be the most robust are the ones that allow the greatest amount of freedom to their users.

I think that the secret to the WELL's success is the fact that people feel very free to speak there. It's not always comfortable being on the WELL, but it is the case that the users there don't run to management normally to shut other people up. They handle speech on its own terms.

I think that's admirable, and I think that other people should try to duplicate the WELL's success in that area.

I think it's very important that in the face of a lot of uncertainty about what the law allows, system operators remain courageous in allowing a lot of freedom of speech and freedom of expression on their systems. When people are unclear about what might be punished, the temptation is to shut your system down, or to engage in a more active censorship role. I think it's very sad when that happens.

The First Amendment and the principles that underlie it, of freedom of speech, freedom of expression, are only meaningful if people choose to exercise those rights. Choosing to exercise those rights means sometimes that you do create some risks for yourself, but I hope system operators are willing to accept those risks. A free society really depends on the bravery of people and their willingness to assert their rights. ■

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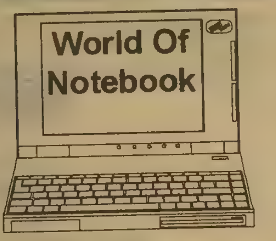

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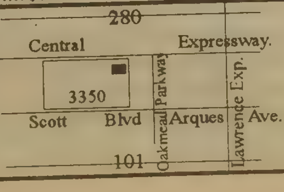

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SpeedStar 64 PCI w/ 1Mb (CL-5434)	$118
Stealth 24 VLB w/ 1Mb (S3-805)	$128
Stealth 32 PCI w/ 1Mb (Tseng W32P)	$108
Stealth 32 VLB or PCI w/ 2Mb (Tseng W32P)	$158
Stealth 64 VLB or PCI w/ 1Mb (S3-864)	$138
Stealth 64 VLB or PCI w/ 2Mb (S3-864)	$178
Stealth 64 VLB or PCI w/ 2Mb (S3-964)	$288
Stealth 64 VLB or PCI w/ 4Mb (S3-964)	$408
Viper VLB w/ 2Mb (Weitek P9000)	$268
Viper SE PCI w/ 2Mb (Weitek P9100)	$258

Orchid

Kevin EZ VLB or PCI w/ 1Mb	$98
Celsius VLB w/ 1Mb (AGX015)	$118
Celsius VLB w/ 2Mb (AGX015)	$168
Kelvin 64 VLB or PCI w/ 1Mb (CL-5434)	$128
Kelvin 64 VLB or PCI w/ 2Mb (CL-5434)	$168

Spider

Spider 32+ VLB w/ 1Mb	$95
Spider 256 Cache VLB w/ 1Mb (128C)	$115
Spider 256 Cache VLB w/ 2Mb (256C)	$155
Spider Black Widow+ VLB / PCI w/ 2Mb	$225
Spider 64 VLB / PCI w/ 2Mb or 4Mb	$165 / $265
Spider Tarantula 64 VRAM VLB / PCI w/ 2Mb	$265
Spider Tarantula 64 VRAM VLB / PCI w/ 4Mb	$385

ATI Technologies Inc.

Graphic Ultra Pro VLB w/ 2Mb (OEM)	$228
Graphic Ultra Pro PCI w/ 2Mb (OEM)	$258
Graphic Pro Turbo PCI w/ 2Mb Vram (OEM)	$278
Graphic Pro Turbo PCI w/ 4Mb Vram (OEM)	$478
Graphic Ultra Pro PCI w/ 2Mb VRAM (Retail)	$278
Graphic Pro Turbo PCI w/ 2Mb Vram (Retail)	$348
Graphic Pro Turbo PCI w/ 4Mb Vram (Retail)	$548

Hercules (Retail box)

Dynamite Stinggray VLB w/ 1Mb	$118
Dynamite Power VLB w/ 2Mb (ET4000 / W32p)	$208
Dynamite Power PCI w/ 2Mb (ET4000 / 32p)	$208
Dynamite Graphic Power VLB w/ 2Mb (AGX016)	$298
Dynamite Graphic Power PCI w/ 2Mb (AGX016)	$298

Matrox

MGA PCI / 2 Plus w/ 2Mb (Retail)	$398
MGA PCI / 2 Plus w/ 4Mb (Retail)	$558

Number 9

9GXE64 VLB w/ 2Mb (S3-864)	$245
9GXE64 PCI w/ 2Mb (S3-864)	$245
9GXE64 PRO VLB / PCI w/ 2Mb (S3-964)	$355
9GXE64 PRO VLB / PCI w/ 4Mb (S3-964)	$525

MONITOR

14" (1024 x 768) .39 interlaced	$168
14" (1024 x 768) .28 interlaced	$198
14" (1024 x 768) .28 Non-interlaced	$208
15" (1280 x 1024) .28 Non-interlaced	$288

Acer (2 years Warranty)

14" ACER 34T (1024 x 768) .28 NI	$248
15" ACER 56L	$338
15" ACER 76I	$598

ViewSonic

14" ViewSonic 6E	$258
15" ViewSonic 15EX	$358
17" ViewSonic 17G	$758
17" ViewSonic 17	$858
20" ViewSonic 20	$1428
21" ViewSonic 21	$1628

ADI

14" ADI 3G (1280 x 1024) .28 NI	$288
15" ADI 4G (1280 x 1024) 28 NI 72Hz	$358
17" ADI 5A (1280 x 1024) .26 NI (Low Radiation)	$678

SAMPO

15" Sampo (1280 x 1024) .28 NI	$338

Sony

15" 15SF (1280 x 1024) .25 Non-Interlaced	$438
17" GDM - 17SE1	$928
20" GDM - 20SE1	$1799

NANAO

17" Nanao F550iw (1280 x 1024) .28 NI	$928
Other	$Call

INTERFACE CARDS

(Generic)

ISA IDE 2HD & 2FD 2s, 1p, 1g	$13
PCI IDE 2HD only	$18
ISA IDE 2HD & 2FD 2s (16,550 UART), 1p, 1g	$29
VLB IDE 2HD & 2FD 2s, 1p, 1g	$16
VLB IDE 4HD & 4FD 2s (16,550 UART), 1p, 1g	$38

DTC

2278 IDE VLB 2HD & 2FD 2s, 1p, 1g	$19.95
3270 SCSI VLB 7SCSI & 2FD	$108
2277 IDE VLB Caching (0-16Mb)	$108
3290 EISA SCSI (0-4Mb)	$249.95

Adaptec

1542C w/o Kit or w/ Kit (OEM)	$156 / $198
2842 VL Fast SCSI-II VESA w/ Kit (Retail)	$228
2940 PCI SCSI-2 w/ kit (OEM)	$198
2940 PCI SCSI-2 w/ kit (Retail)	$265
2742T Single w/o Kit (OEM)	$198

Promise Technology

DC-420 IDE VLB 2HD & 2FD w/ 512KB 2s, 1p, 1g	$98
DC-4030 IDE VLB 4HD & 2FD (0—>16MB)	$98

Buslogic

BT-445s VLB SCSI-II 7SCSI & 2FD	$188
BT-946C PCI SCSI-2 7SCSI	$238
BT-757S Fast-Wide SCSI w/ kit	$358

A.I.R

QAcess IDE & SCSI	$118

HARD DISK

Western Digital

213MB IDE 14ms (WD-2120)	$165
340MB IDE 13ms (WD-2340)	$195
420MB IDE 12ms (WD-2420)	$218
540MB IDE 12ms (WD-2540)	$288
700Mb IDE 10ms (WD-2700)	$408
1.0GB IDE 10ms (WD-31000)	$548

Maxtor

345MB IDE 14ms (7345A)	$188
540MB IDE 12ms (MXT-7546A)	$248
540MB IDE 8.5ms (MXT-540A)	$338
340MB SCSI 14ms (7345S)	$218
540MB SCSI-2 8.5ms (MXT-540S)	$348
1.2GB SCSI-2 8.5ms (MXT-1240S)	$748

Conner

213MB IDE 14ms (CFS210A)	$158
420MB IDE 12ms (CFS420A)	$208
540MB IDE 12ms (CFA540A)	$268
540MB SCSI 12ms (CFA540S)	$288
1.0GB SCSI 10.5ms (CFP1060S)	$578
1.0GB Fast SCSI-III (New Model)	$668

Fujitsu

1.0GB SCSI-II 10ms (M2694ESA)	$608
1.06GB SCSI-III 10ms (M2694EQA)	$698

Quantum

1.08GB Fast SCSI-III (PD1080S)	$638
2.1GB SCSI-2 9ms (E2100s)	$1,178

Micropolis

1.05GB SCSI-2 8.5ms (MC4110)	$598
1.75GB SCSI-2 10ms (MC2217)	$888
3.0GB SCSI-2 11ms (MC1936)	$1978

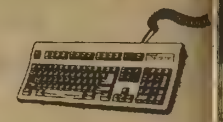
FLOPPY DRIVE

1.44Mb (Panasonic)	$32
1.2Mb (Panasonic)	$42
1.44Mb (TEAC)	$34
1.2Mb (TEAC)	$45
1.44Mb (TEAC) Black	$38
1.2Mb (TEAC) Black	$48
1.2MB & 1.44MB Combo (EPSON)	$83
1.2MB & 1.44MB Combo (TEAC)	$99

CD-ROM DRIVE

Sony 33A Double Speed w/o Controller	$115
Panasonic 563 Double Speed w/o Controller	$128
Mitsumi Double Speed 250ms w/ controller	$125
Sony 33A Double Speed w/ Controller	$125
Toshiba Double Speed SCSI 200ms (XM-3401B)	$248
NEC Triple Speed SCSI 190ms (510)	$278
NEC Triple Speed SCSI 190ms (3XI)	$428
Flextor 3028 Double Speed SCSI 240ms (3028)	$238
Flextor 4Plex Quad Speed SCSI 150ms	$465
Chinon CD-535 SCSI-II 280ms	$308
Chinon CD-535 SCSI-II w/ Card & Software	$448

KEYBOARD



Mitsumi 101 Enhanced Keys
Qtronic 101 Enhanced Keys (Black)
Keytronic 101 Enhanced Keys
NMB 101 Enhanced Keys Click
Focus 2001 101 Enhanced Keys
Focus P9000 Click w/ Calculator

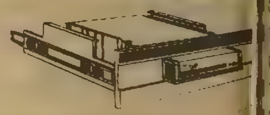
MODEMS

Modem & FAX 14.4 (Internal)
SupraExpress Modem & Fax 14.4 (Internal)
GVC Modem & Fax 14.4 (Internal)
GVC Modem & Fax 28.8 (Internal)
US Robotic Modem 14,400 & Fax 14,400 Inter
US Robotic Modem 14,400 & Fax 14,400 Exter
Other

MICE

3-Buttons Serial
TrackBall Serial
Pen Mouse
Logitech 2 Buttons Serial
Logitech MouseMan Bus
Logitech Portable Serial
Logitech Dexxa Serial
Logitech First Serial
Logitech MouseMan Serial
Logitech First TrackBall Serial
Logitech TrackMan Serial
Logitech TrackMan Voyager Serial
Logitech CyberMan 3D Controller
Microsoft Serial Mouse (Ergonomic)
Microsoft Bus Mouse (Ergonomic)

ACCESSORIES



Colorado 250Mb Tape Back-up (Retail Box)
CPU Cooling kit w/ heatsink & fan
CPU Cooling Kit w/ heatsink & fan (Pentium)
Power Y Cable
Power Center (Surge Protector)
Speakers 5 Watts
Speakers 25 Watts
Speakers 80 Watts
MS-DOS 6.22 (OEM)
MS-DOS Windows 3.11 (OEM)

Sound Card

Sound Blaster Pro Value Edition
Sound Blaster 16 Basic Value Edition
Sound Blaster 16 MCD
Sound Blaster 16 MCD w/ ASP
Sound Blaster 16 SCSI-II
Sound Blaster 16 SCSI-II w/ ASP
Sound Blaster AWE 32
Game Blaster CD 16 (Package)

Case & Power Supply

Mini tower + 230 watts P.S
Desk Top Case + 230 watts P.S
Super Mini Tower + 250 watts P.S
Mid tower Case + 230 watts P.S
Full Tower Case + 250 watts P.S
Multi Media Desk Top Case + 250 watts P.S
Super File Tower Case + 300 watts P.S
Other

BUY DIRECT FROM FACTORY AND SAVE!

ackage 1 System

486 VLB Series

- therBoard w/ CPU
- 6K Cache
- b Ram installed
- Controller VLB 2HD & 2FD w/ 2s, 1p, 1g
- ppy Drive 1.44Mb
- rd Disk 213Mb IDE 14ms
- ndow Accelerator VLB w/1Mb
- Super VGA Color Monitor (1024x768) .39
- 1 Keys Enhanced Keyboard
- ni Tower Case w/ 230 Watts Power Supply
- **ee 3 Buttons Serial Mouse**

yrix 486DX-33	**$848**
yrix 486DX-40	**$858**
yrix 486DX2-50	**$888**
MD 486DX-40	**$898**
MD 486DX2-66	**$948**
tel 486DX-33	**$938**
tel 486DX2-66	**$978**

Package 2 System

486 VLB Series

- MotherBoard w/ CPU
- 256K Cache
- 4Mb Ram installed
- IDE Controller VLB 2HD & 2FD w/ 2s, 1p, 1g
- Floppy Drive 1.44Mb
- **Hard Disk 420Mb IDE 12ms**
- Window Accelerator VLB w/1Mb
- **14" Super VGA Color Monitor (1024x768) .28 NI**
- 101 Keys Enhanced Keyboard
- Mini Tower Case w/ 230 Watts Power Supply
- **Free 3 Buttons Serial Mouse**

Cyrix 486DX-33	**$928**
Cyrix 486DX-40	**$938**
Cyrix 486DX2-50	**$968**
AMD 486DX-40	**$978**
AMD 486DX2-66	**$1,028**
Intel 486DX-33	**$1,018**
Intel 486DX2-66	**$1,058**

Package 3 System

486 VLB Series

- MotherBoard w/ CPU + 256Kb Cache
- 4Mb Ram installed
- IDE Controller VLB 2HD & 2FD w/ 2s, 1p, 1g
- Floppy Drive 1.44Mb
- **Hard Disk 420Mb IDE 12ms**
- **Spider+ VLB Window Accelerator VLB w/1Mb**
- **14" Acer 34T Super VGA Color Monitor (1024x768) .28 NI**
- 101 Keys Enhanced Keyboard
- Mini Tower Case w/ 230 Watts Power Supply
- **Free 3 Buttons Serial Mouse**

Cyrix 486DX-33	**$988**
Cyrix 486DX-40	**$998**
Cyrix 486DX2-50	**$1,028**
AMD 486DX-40	**$1,038**
AMD 486DX2-66	**$1,088**
Intel 486DX-33	**$1,078**
Intel 486DX2-66	**$1,118**

Package 4 System

486 VLB Series

- MotherBoard w/ CPU + 256Kb Cache
- 4Mb Ram installed
- IDE Controller VLB 2HD & 2FD w/ 2s, 1p, 1g
- Floppy Drive 1.44Mb
- **Hard Disk 420Mb IDE 12ms**
- **Spider + Windows Acclerator VLB w/ 1Mb**
- **15" Acer 56L Super VGA Color Monitor (1024 x 768) 76Hz Refresh .28 NI**
- 101 Keys Enhanced Keyboard
- Mini Tower Case w/ 230 Watts Power Supply
- **Free 3 Buttons Serial Mouse**

Cyrix 486DX-33	**$1,088**
Cyrix 486DX-40	**$1.098**
Cyrix 486DX2-50	**$1,118**
AMD 486DX-40	**$1,128**
AMD 486DX2-66	**$1,178**
Intel 486DX-33	**$1,168**
Intel 486DX2-66	**$1,218**

Multi Media System

486 Best Buy

- SIS-471 MotherBoard w/ CPU (ZIF socket)
- 256K Cache
- 4Mb Ram installed (72-pin)
- IDE Controller VLB 2HD & 2FD w/ 2s, 1p, 1g
- Floppy Drive 1.44Mb
- Hard Disk 420Mb IDE 12ms
- Spider+ Windows Acclerator VLB w/ 1Mb
- 15" Acer 56L Super VGA Color Monitor (1024x768) 76Hz Refresh .28 NI
- 101 Keys Enhanced Keyboard
- Super Mini Tower Case w/ 250 Watts P.S
- Microsof Serial Mouse
- Sony 33A Double Speed CD-ROM
- Sound Blaster 16 MCD

AMD 486DX2-66	**$1,378**
Intel 486DX-33	**$1,428**
Intel 486DX2-66	**$1,468**

Opti VLB System

P5-VLB Series

- Opti MotherBoard w/ Intel CPU
- **256Kb cache**
- 8Mb Ram installed (72-pin)
- IDE Controller VLB 2HD & 2FD w/ 2s, 1p, 1g
- Floppy Drive 1.44Mb
- Hard Disk 420Mb IDE 12ms
- Window Accelerator VLB w/ 1Mb
- 14" Super VGA Color Monitor (1024x768) .28 NI
- 101 Keys Enhanced Keyboard
- Mini Tower Case w/ 230 Watts Power Supply
- 3 Buttons Serial Mouse
- CPU Cooling Kit (HeatSink & Fan)

Intel P5-60MHz	**$1,538**
Intel P5-66MHz	**$1,638**
Intel P5-90MHz	**$1,938**

Biostar PCI System

P5-PCI LB Series

- Biostar MotherBoard w/ Intel CPU
- 256K Cache
- 8Mb Ram installed
- IDE Controller 2HD & 2FD w/ 2s, 1p, 1p
- Floppy Drive 1.44Mb
- Hard Disk 420Mb IDE 12ms
- Orchid 64 PCI w/ 1Mb
- 14" Super VGA Color Monitor (1024x768) .28 NI
- 101 Keys Enhanced Keyboard
- Mini Tower Case w/ 230 Watts P.S.
- 3 Buttons Serial Mouse
- CPU cooling kit (Heatsink & Fan)

Intel P5-60MHz	**$1,638**
Intel P5-66MHz	**$1,748**
Intel P5-90MHz	**$1,998**

Intel PCI System

P5-PCI LB Series

- Intel MotherBoard w/ CPU (ZIF socket)
- 256K Cache
- 8Mb Ram installed 70ns
- IDE Controller PCI LB 2HD & 2FD w/ 2s, 1p,
- Floppy Drive 1.44Mb
- Hard Disk 540Mb IDE 12ms
- TsengLab 32P Windows Accelerator PCI w/ 1Mb
- 15" AcerView 56L Super VGA Color Monitor (1024x768) 76Hz Refresh .28 NI
- Keytronic 101 Keys Enhanced Keyboard
- Super Mini Tower Case w/ 250 Watts P.S
- Microsoft Serial Mouse
- CPU Cooling Kit (Heatsink & Fan)

Intel P5-60MHz	**$1,868**
Intel P5-66MHz	**$1,968**
Intel P5-90MHz	**$2,258**

☐ ***One Year Warranty Parts & Labor on Systems***

☐ ***Customize Configuration Available***

☐ ***Financing Available***

☐ ***All Systems Are Burned-In and Tested for 72 Hours***

PIXEL U.S.A.

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Product Spotlight

UPDATES

- **Aladdin Systems** is shipping **Stuffit Expander 3.5**, the latest version of its Macintosh freeware product for expanding files downloaded from online services. The new version includes support for Expander Enhancer. Aladdin Systems, 165 Westridge Dr., Watsonville, CA 95076. (408)761-6200.
- **DayStar Digital** announced a **Universal Upgrade Program**. Registered owners of any DayStar product can now inexpensively upgrade to the latest DayStar products, including discontinued products. DayStar Digital, Inc., 5556 Atlanta Hwy., Flowery Branch, GA 30542. (404)967-2077.
- **DeltaPoint** released **DeltaGraph Pro 3.5 for Macintosh**, a new version of its charting program. Upgrades from v3.0 are $29.95, $79.95 from older versions, and the SRP is $195. DeltaPoint, Inc., 2 Harris Ct., Suite B-1, Monterey, CA 93940. (408)648-4000.
- **DiagSoft** introduced **QAPlus/Win 6.0**, the newest version of its utility program providing online access to support professionals for PC troubleshooting. DiagSoft, Inc., 5615 Scotts Valley Dr., Suite 140, Scotts Valley, CA 95066. (408)438-8247.
- **Hayes Microcomputer Products** released **Smartcom for Windows v1.1**, which now includes RIPscrip Graphics Emulation. Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348-5203. (404)840-9200.
- **Monotype Typography** is shipping **Monotype CD 4.0**, a two-CD set of over thirty-four hundred typefaces, including Monotype Classic Fonts, Adobe Type Library, Type Designers of the World, and Clip Art and Software Products. Monotype Typography Inc., 150 S. Wacker Dr., Chicago, IL 60606. (312)855-1440.
- **Mustang Software** released **Wildcat! v4**, with more than 250 enhancements to its electronic bulletin board system software. It is available in five different versions, starting at $129 for the single-line package. Mustang Software, Inc., P.O. Box 2264, Bakersfield, CA 93303. (805)873-2500, BBS (805)873-2400.
- **Practical Peripherals** is offering customers with V.FAST Class modems a **factory upgrade to the ITU-T V.34 standard for $49**. They should request an RMA before sending in their V.FC modems. Practical Peripherals, 375 Conejo Ridge, Thousand Oaks, CA 91361-4928. (805)496-7707.
- **RSA** released **BSAFE 2.1**, an upgrade of its crypto developer's toolkit. The new version includes larger key sizes and more algorithms among other features. RSA Data Security, Inc., 100 Marine Pkwy., Suite 500, Redwood City, CA 94065-1031. (415)595-8782.
- **Spectrum** announced the release of **v6.1 of HR/Pay**, its fully integrated human resource and payroll system. Spectrum Human Resource Systems Corp., World Trade Center, 1625 Broadway, Suite 2700, Denver, CO 80202. 1-800-334-5660.
- **SQA** released **SQA TeamTest for PowerBuilder v3.0**, an upgrade to its automated GUI client/server testing tool for the PowerBuilder development environment. Software Quality Automation, Inc., 10 State St., Woburn, MA 01801. (617)932-0110.

New Products

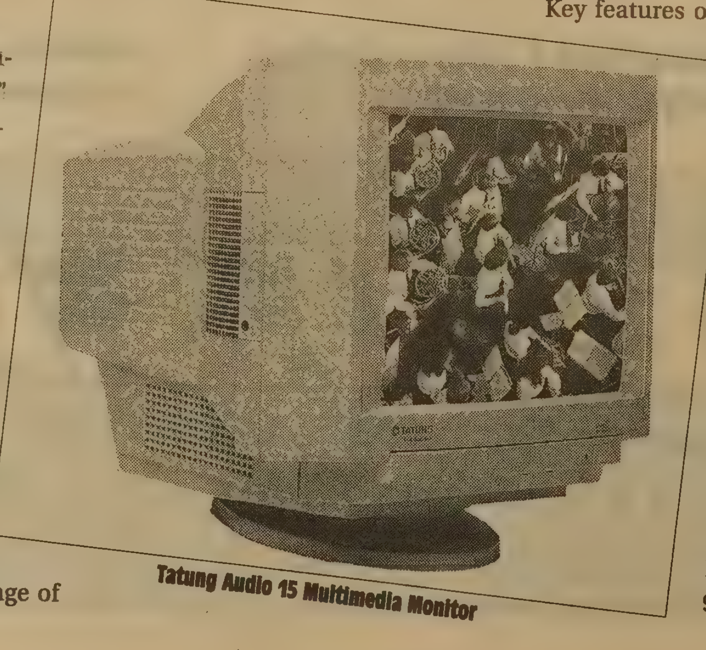
Monitors

Daytek Energy Star Monitor

The new DT-1701M2 is both PC and Macintosh computer compatible straight from the box. This Energy Star compliant, 17" color monitor features a flat nonglare/antistatic screen, edge-to-edge display, and a 140MHz AMP bandwidth. It supports a maximum resolution of 1600 x 1280 and meets the Swedish standard for MPRII low radiation emission. ($684) Daytek Corp., 16371 Gothard St., Unit D, Huntington Beach, CA 92647. (714)375-0210.

Tatung Audio 15 Multimedia Monitor

The Audio 15 is a 15" flat-square screen multimedia monitor with built-in speakers. Its two preinstalled internal speakers located on the sides of the display provide users with a full range of sound effects without taking extra desk space. Key features of the Audio 15 include a front digital control panel and 1024 x 768 noninterlaced resolution. It is EPA Energy Star compliant and meets all environmental and industrial standards, including the Swedish standard for MPRII low radiation, and FCC Class B quality standards. The Audio 15 is compatible with VGA, Super VGA, 8514A, VESA, XGA, and Ultra VGA standards. ($499) Tatung Company of America, Inc., 2850 El Presidio St., Long Beach, CA 90810. (213)979-7055.



Tatung Audio 15 Multimedia Monitor

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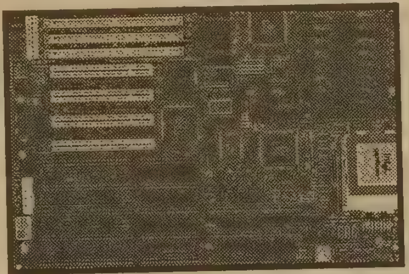
High Quality Motherboards

Take a close look at our motherboard, you'll see why it's the best!

Super™ P54VL-PCI 100/90MHz Motherboard

With 4 PCI master slots and 2 buffer-enhanced VESA master slots, You get a total of 6 Local bus slots, the only one in the world. Our auto-detect green power saving functions makes another quality difference over other motherboards on the market. A cost and performance effective SCSI bundled solution with Adaptec 2940 PCI fast SCSI II, and 2940W fast and wide SCSi III option are also available. Made in USA, with design level technical support and service available. These are just some of the features that make the Acme Super™ Motherboard your choice for the fastest system performance, with the best upgradability and flexibility for the future.



Specifications:

• CPU	Pentium 100 or 90 MHz, 3.3V CPU
• PCI	4 PCI bus master slots
• VESA	2 buffer-enhanced VESA bus master slots
• ISA	5 16-Bit standard AT Slots
• Cache	64-bit wide data bus, supports 512KB or 256KB cache in either WB or WT mode
• DRAM	64-bit wide data bus supports up to 128MB on board
• GREEN	User-programmable Power Saving mode, provides CPU/System board power down and Monitor/Peripheral power saving functions

Performance tests:

Landmark	v2.00	575.77
Powermeter	v1.7	63.9
Norton SI	v4.5	202.2
Winbeanch	v3.11	75

Pentium 100/90 MHz, PCI/Vesa/Green, 256K, w/CPU-90, Made in USA

Only $1083

Pentium 90 MHz, PCI local Bus, 256K, w/CPU, Made by Intel	$1108
Pentium 60/66 MHz, PCI/Vesa/Green, 256K, w/CPU, Made in USA	748/883
Pentium 60/66 MHz, Vesa/Green, 256K, w/CPU, Made in USA	683/818
486DX4-100 256K with PCI SCSI/IDE/FDC controller & IO built-in, No CPU	245
486DX4-100 MHz, Vesa Local Bus with Zif Socket, 256K, No CPU	107
486 PCI & Vesa local bus with Zif Socket, 256K, No CPU	115
486 3*Vesa Local Bus with Zif Socket, Green, 256K, No CPU	88
486 3*Vesa Local Bus, Green, 256K, No CPU	83
386/486 Universal Board, 128K, No CPU	81
386DX-40 Main Board, 128K, w/CPU	85
386SX-40 Main Board, w/CPU	67

SPECIAL SALE

Diamond Stealth 64 SVGA Card w/2MB PCI or VLB	$199
15" Non-Interlaced 1280x1024 .28 Green Monitor	$299
Adaptec 2940 PCI SCSI Controller	$199
80 Watt Stereo Speakers	Great Buy $50
Enhanced IDE & High Speed I/O VLB	$39
CPU Cooling Fan for Pentium	$8

Pentium 90MHz Local Bus PCI/VESA System

FCC Approved

- 256K Cache
- 8MB RAM
- 540MB SCSI Hard Drive
- Diamond Stealth 64 SVGA Card w/2MB
- Adaptec 2940 SCSI Controller
- 15" 1280x1024 .28 SVGA Green Monitor
- 1.44MB Floppy Drive
- 2 Serial, 1 Parallel ports
- Mid-Tower Case w/230Watt Power Supply
- 101 Keyboard

$2588

486DX2-66 VESA Local Bus Green System

FCC Approved

- 256K Cache
- 4MB RAM
- 420MB IDE Hard Drive
- VESA Local Bus VGA Card w/1MB
- VESA Local Bus IDE Hard Disk & Floppy Controller
- 15" Non-Interlaced .28 SVGA Monitor
- 1.44MB Floppy Drive
- 2 Serial, 1 Parallel ports
- Mid-Tower or Desktop Case
- 101 Keyboard

$1198

--Brand Name Video Graphics Card--

ATI Mach 64 with 4MB VRAM, PCI or Vesa	$498
ATI Mach 32 with 2MB VRAM, PCI Local Bus	228
ATI Mach 32 with 1MB DRAM, PCI Local Bus	108
ET4000 W321 Local Bus VGA with 1MB/2MB	93/148
Cirrus Logic 5428 Vesa Local Bus with 1MB	71
Trident 8900D Super VGA with 1MB	53
Trident 9400 VLB Local Bus with 1MB	63
Trident 9000 Super VGA with 512K	35

--Brand Name Controllers--

Adaptec 2940W SCSI 3 controller	$275
Adaptec 2940 SCSI Controller, PIC	199
Adaptec 2842 SCSI controller	199
Adaptec 1522A SCSI Controller	76
PCI SCSI Controller, NCR	65
PCI Local Bus IDE Controller	29
Vesa Multi IDE-I/O	18
ISA Multi IDE-I/O	12

--Brand Name Hard Drives--

2.1GB SCSI Quantum	$1150
1.0GB SCSI Conner	630
545MB SCSI Conner	330
1.0GB IDE Conne	550
810MB IDE Conner	418
540MB IDE Conne	258
420MB IDE Conner	208
270MB IDE Conner	188
210MB IDE Conner	163
Tape Back-ups	
Colorado 250MB	155

--Floppy Drives--

Teac 1.2 & 1.4	$79/Pair
Mistumi 1.2 & 1.4	73/Pair

--Super VGA Monitors--

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17" 1280x1024 .28 Non-Int	668
NEC 4FGe	680
NEC 5FGe	1069
14" Mono	76
14' Mono VGA	88

--Keyboards--

Mitsumi 101 Keyboard	$15
Mitsumi 101 Enhanced	23
MaxiSwitch Keyboard	26
Keytronic 101 Keyboard	25

--Cases--

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Desktop with 230W	42
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230W power supply	29

--CD ROM & Sound Card--

Mitsumi FX001D, 250ms 350kb/sec	$128
Sony CDU 33A, 320ms, 300kb/sec	128
Gallant Sound Card SC6000, 16 Bit Kit w/ Microphone & Speakers	$99
Sound Blaster 16 MCD (OEM)	94

--Basic CD Titles--

6 CD Titles, 3 CD's '94 versions	$45

The Animals, Chessmaster 4000, Mavis Beacon Teaches Typing, Software Toolworks, Multimedia Encyclopedia, US/World Atlas

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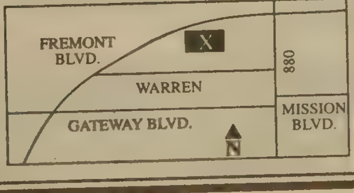

Pacom KC71e Color Monitor

The Pacom KC71e features a flat, 17" screen, 0.28mm dot pitch, and edge-to-edge 1280 x 1024 CAD/CAM-ready resolution to provide highly accurate, lifelike images. It is EPA Energy Star compliant as well as meeting the Swedish standard for MPRII low radiation emission. The KC71e works with VESA- and SVGA-based PCs and Macintosh computers. Pacom monitors are backed by a comprehensive two-year warranty, 24-hour turn around repair service, and a toll-free 1-800-820-7226 number service and technical support. Pacom International, Inc., 3333 Bowers Ave., Suite 415, Santa Clara, CA 95054. (408)982-9375.

CD-ROMs

Sound Factory I

The Sound Factory CD-ROM provides a new way to test the quality of Windows-based sound cards. Users can choose among audio modes that include 8-bit or 16-bit resolution; stereo or mono; and 44K, 22K, or 11K sampling rates. By experimenting with different combinations, users will become familiar with the different sound qualities available on their computer. The CD, with more than 500MB of WAV format audio files, contains thirty pieces of upbeat music and sound effects. Each clip is accompanied by a 256-color photographic image that can be reproduced royalty free. The Sound Factory CD can be used on an audio CD player as well as on a multimedia system. ($49.95) Accurate Research, Inc., 1500 Wyatt Dr., #10, Santa Clara, CA 95054. (408)748-9988.

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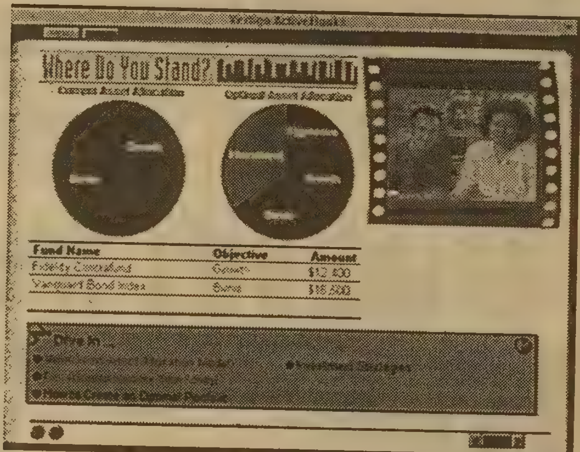
DEMO PROGRAM
WAVE FILE
STEREO 44

Vertigo's Your Mutual Fund Selector

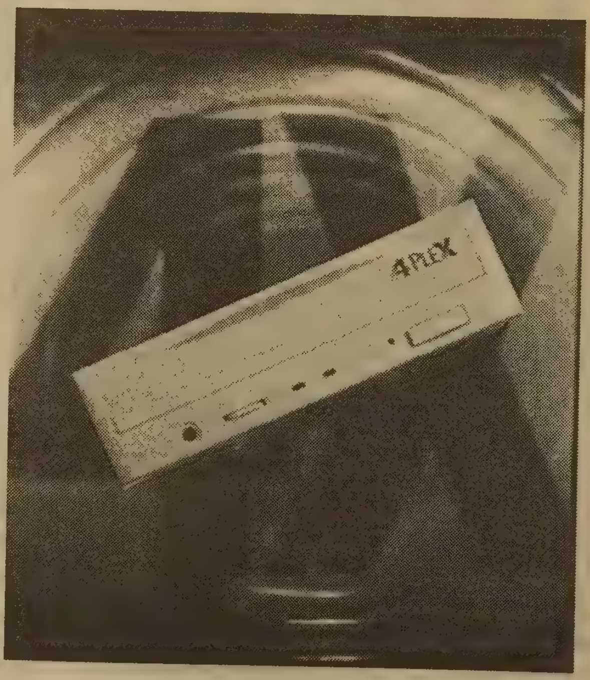
Your Mutual Fund Selector is a multimedia software program for Windows on CD-ROM that teams interactive video technology with detailed Morningstar ratings of more than one thousand mutual funds to guide users in researching and identifying the funds that meet their personal investment needs. Interactive graphical worksheets let investors easily and simply probe Morningstar's database of mutual fund financial characteristics and walk the user through the process of building a personal financial profile, evaluating risk tolerance, determining asset allocation based on sound investment principles, and selecting individual funds. ($49.95) Vertigo Development Group, 58 Charles St., Cambridge, MA 02141. (617)225-2065.



CD-ROM Hardware

Plextor 4PLEX Drives

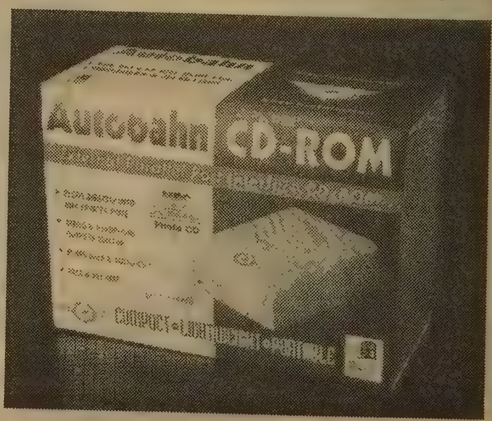
The 4PLEX is a line of half-height, quad speed CD-ROM drives with a 600KB/sec data transfer rate, a 220ms random access speed, and a 1MB buffer. Available in internal (PX-43CH) and external (PX-45CH) models (the external can be used in both PC and Mac environments), they are SCSI-2, XA, and Kodak Photo CD multisession compatible; far exceed MPC Level 2 specifications; and are available with a SCSI interface board. ($549 for the PX-43CH; $649 for the PX-45CH) Plextor Corp., 4255 Burton Dr., Santa Clara, CA 95054. (408)986-1010.



Portable Solutions Autobahn CD-ROM Drive

The Autobahn CD-ROM drive is a portable double-speed drive designed for notebooks and laptops with a data transfer rate of 300KB/sec and an access time of 320ms. It is compatible with Windows, Kodak Photo CD, and Sound Blaster sound boards and is compliant with MPC Level 2. The CD-ROM plugs into the parallel port and includes built-in audio and headphone outputs and an international automatic switching power supply. It comes with audio CD player software for DOS and Windows. ($430) Portable Solutions, Inc., 3901 E. Coronado St., Anaheim, CA 92807. (714)632-1123.

Continued on page 138



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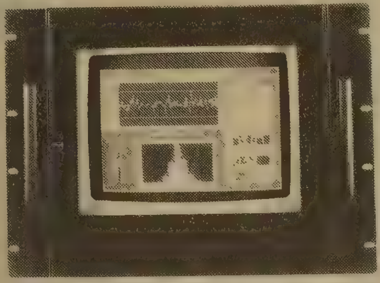

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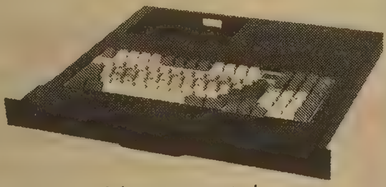

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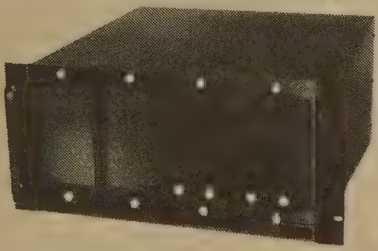

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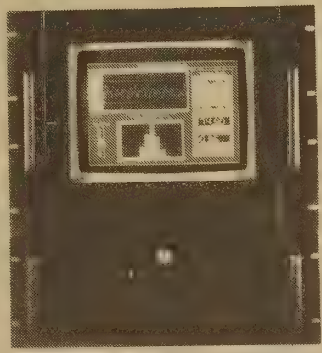

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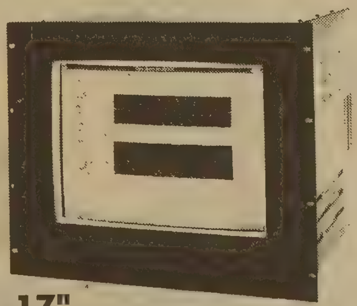

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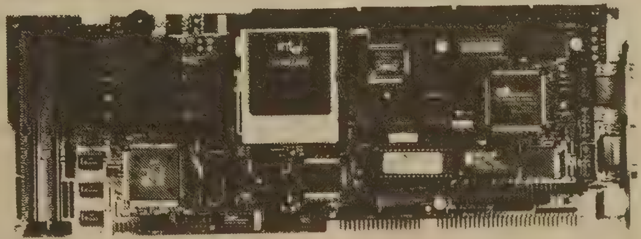

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PENTIUM -66/256C VLB PCI USA	278	778	Call	Call	Call	Call	Call	1,428	1,468	1,538
PENTIUM -60/256C VLB PCI USA	278	688	Call	Call	Call	Call	Call	1,348	1,388	1,458
PENTIUM -60/256C VLB USA	208	618	Call	Call	Call	Call	Call	1,278	1,318	1,388
PENTIUM -90/256C VLB PCI	308	988	Call	Call	Call	Call	Call	1,648	1,688	1,758
PENTIUM -90/256C VLB	288	968	Call	Call	Call	Call	Call	1,628	1,668	1,738
PENTIUM -66/256C VLB	188	688	Call	Call	Call	Call	Call	1,338	1,378	1,448
PENTIUM -60/256C VLB PCI	218	628	Call	Call	Call	Call	Call	1,288	1,328	1,398
PENTIUM -60/256C VLB	188	598	Call	Call	Call	Call	Call	1,258	1,298	1,368
IBM 486BL-75/256C VLB	N/A	228	388	608	638	738	788	888	928	998
IBM 486SLC2-66/64C VLB	N/A	158	308	538	568	668	718	818	858	928
486DX2-66C VLB	74	258	408	648	678	778	828	928	968	1,038
486DX-50C VLB	74	258	408	648	678	778	828	928	968	1,038
486DX2-50C VLB	74	218	368	598	628	728	778	878	918	988
486DX-40C VLB	74	184	338	564	594	694	744	844	884	954
486DX-33C VLB	74	178	334	558	588	688	738	838	878	948
486SX-25 VLB	74	128	268	508	538	638	688	788	828	898
486DLC-40/128C VLB	88	144	298	524	554	654	704	804	844	914
486DX2-66/128C NICE EISA VLB	188	438	588	818	848	948	998	1,098	1,138	1,208
486DX2-66/128C EISA VLB	138	388	538	768	798	898	948	1,048	1,088	1,158
486DX-33/128C NICE EISA VLB	188	398	543	778	808	908	958	1,058	1,098	1,168
IBM 486SLC2-50C ISA	N/A	148	294	528	558	658	708	808	848	918
486DX2-66C ISA	64	248	398	638	668	768	818	918	958	1,028
486DX2-50C ISA	64	208	358	588	618	718	768	868	908	978
486DX-40C ISA	64	174	334	554	584	684	734	834	874	944
486DX-33C ISA	64	168	328	548	578	678	728	828	868	938
486SX-33C ISA	64	134	278	514	544	644	694	794	834	904
486SX-25C ISA	64	108	258	488	518	618	668	768	808	878
386DX-40/128C	N/A	82	218	462	492	592	642	742	782	852
386SX-40	N/A	56	208	436	466	566	616	716	756	826

* **BASIC SYSTEM:** Motherboard & CPU, 1MB RAM, IDE with 2S/1P/1G, 1.44MB FDD, Enhance Case with Power Supply, and 101-Key Keyboard.

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486DLC-33/128K VLB	778
486DLC-40/128K VLB	788
486SX-25/128K ISA / VLB	768 / 778
486SX-33/128K ISA / VLB	788 / 798
486DX-33/128K ISA / VLB	818 / 828
486DX-40/128K ISA / VLB	828 / 838
486DX2-50/128K ISA / VLB	848 / 858
486DX2-66/128K ISA / VLB	898 / 908
IBM 486SLC2-66/64K VLB	798
IBM 486 BL-75/256K VLB	868
486 DX-33/128K NICE EISA VLB	1,048
486 DX2-66/128K EISA VLB	1,018
486DX2-66/128K NICE EISA VLB	1,088
ORCHID 486DX2-66/256K VLB	1,068
Pentium P5-60/256K VLB	1,248
Pentium P5-60/256K VLB - PCI	1,268
Pentium P5-66/256K VLB	1,338
Pentium P5-66/256K VLB - PCI	1,358
Pentium P5-90/256K VLB	1,608
Pentium P5-90/256K VLB - PCI	1,628
Pentium P5-60/256K VLB USA	1,268
Pentium P5-60/256K VLB - PCI USA	1,328
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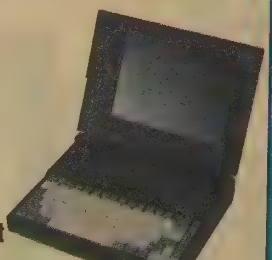

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486DX2-66	1,568	2,048	3,028

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- 200MB Fast IDE Hard Drive
- Focus 2001 Keyboard
- 14" Non-Interlaced SVGA Monitor
- Medium Tower Case w/Power Supply

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Pentium P5-90/256K	**$1,948**

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540MB Hard Drive	Add $100
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Edutainment CD 16 Upgrade Kit	376
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Mediavision Pro Audio Studio 16	128
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Orchid Soundwave Sound Card (AT)	158
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Panasonic CD-562 Dual Speed	**128 (w/Card 136)**
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ACS50/ACS100.1/ACS300.1	66 / 98 / 228
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Animals v1.0 DOS	12
Arthur's Teacher Trouble	16
Atlas Pak v3.1 World/US	15
Barney Bear Go to School	15
Barney Bear Go to Space	15
Battle Chess DOS	15
Beauty & Beast MPC	12
Bring the World to Your Senses	11
Campton's Interactive Encyclopedia MPC	24
Carmen San Diego DOS	18
CD Deluxe Pak (Chess Master 3000, Mavis Teaches Typing, US Altas, World Atlas)	14
CD Game Pack II DOS	15
Chess Master 4000 MPC	15
Composer Quest MPC	18
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Family Doctor DOS/MAC	16
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Playing with Language (Spanish)	16
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US Atlas v3.1 MPC	13
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2742T EISA (Twin SCSI)	258
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Fax Modem 28.8 (28.8 Data, 14.4 Fax) Ext	158
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Pocket Fax Modem (14,400/14,400)	174
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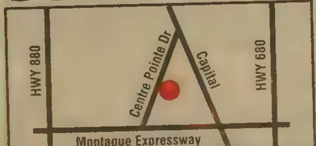

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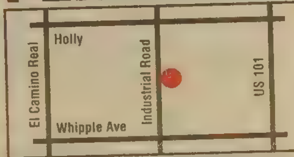

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Mac Software

AMI HouseCall

HouseCall is an easy-to-use medical reference guide and symptom analysis tool designed to help the average person become a more informed consumer of medical care. By entering their symptoms and answering probing questions, individuals can obtain a list of possible causes of their ailments. HouseCall provides information covering over 90% of the most common diseases, interactive symptom analysis, many drug side effects and drug interaction, treatment and surgeries, nutrition and diet, first aid techniques, poison control, disease prevention, and even allows users to build and maintain medical records. A Windows version is also available. ($99.95) Applied Medical Informatics, 2681 Parley's Way, Suite 101, Salt Lake City, UT 84109-1630. (801)464-6200.

The Internet Membership Kit

The Internet Membership Kit is a software package that puts personal computer users on the Internet. It provides a graphical interface and comes with MacTCP connection protocol software from Apple; Eudora for exchanging email on the Internet; TurboGopher, Fetch, and StuffIt Expander for finding, retrieving, and decompressing Internet files; InterSLIP, a connection utility; complete Mosaic documentation; the *Internet Tour Guide* and the *Internet Yellow Pages*; access to the Internet Visitors Center; and one month's free service and six hours of free online time on the Internet through CERFnet. A Windows version is also available. ($69.95) Ventana Media, P.O. Box 2468, Chapel Hill, NC 27515. 1-800-743-5369.

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Reviews

Game Reviews

XCom: UFO Defense

Designed By: Julian Gollop & Nick Gollop
Published By: Microprose
List Price: $54.99
For: 386, MS-DOS 5.0, 4MB RAM, VGA, mouse required, Adlib/Sound Blaster/Roland/Covox
Reviewed By: Fred Haslam

Any time you play till 4:00 am, you know you've got a good game. I nominate XCom for 1994 Game of the Year. This game is a vastly improved version of the classic strategy game Breach. The graphics are similar to Breach II, but the interface is smoother and the tactical battle is set within a well-defined strategy game.

This strategy game is based on the premise that UFOs are the precursor to an alien invasion. Not just one invasion—so far I've identified three races and I would not be surprised to discover more. As you hunt down and capture alien invaders, you research their technology and search for clues to their origin. The tactical situations start with the cleanup of downed UFOs, progress to alien terror attacks on major cities, and advance to the destruction of hidden alien bases.

The interface is smooth and easy to learn. You may need to consult the rules to learn all the intricacies available. The graphics are top-notch, with many comic book quality still frames. The animation in the battle screen is very fluid. The music is subdued, but has the urgent mystery reminiscent of the movie *Alien*. Sound effects are great, from blasters to death cries.

This is a premier tactical game and a good solid strategy game. XCom has the quality of continually surprising me. It grows in complexity as I learn more about the tools available and the forces arrayed against me. Prepare to lose a lot of sleep. (Microprose, Inc., 180 Lakefront Dr., Hunt Valley, MD 21030-2245. 410/771-1151)

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CA-1765CP/SP 17" 1280x1024 N-I	$659

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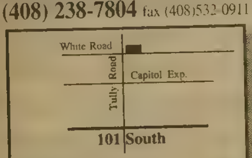

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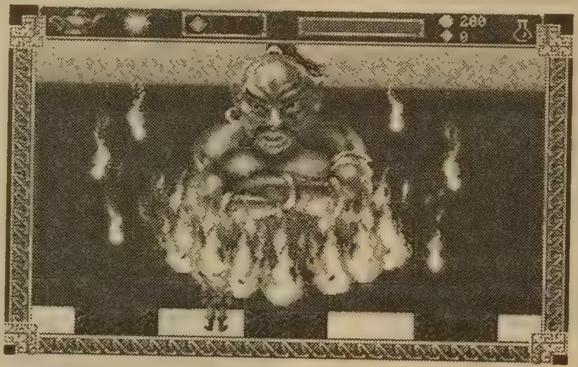
Al-Quasim: The Genie's Curse

Designed By: Herb Perez
Published By: Strategic Simulations Inc.
List Price: $49.99
For: IBM 386, DOS 5.0, 4MB RAM, VGA, CD-ROM @ 150K/s, all major sound cards
Reviewed By: Fred Haslam

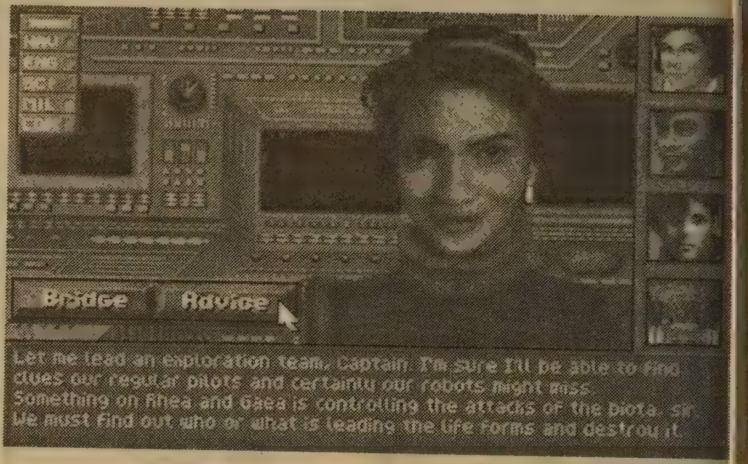
Genie is a combat/adventure game with an Arabic flavoring. The player solves puzzles and defeats monsters using an overhead combat system reminiscent of Gauntlet. The character advances according to the D&D role-playing system. Genie is a good solid eight hours of adventure.

The adventure begins with your hero returning home to find that the family genie has gone berserk, attacking the Caliph. The Caliph imprisons the hero's family, but allows him to try to prove their innocence. You wander across exotic islands, battling pirates and elementals, eventually entering the realm of the Djinn to find the truth.

The interface is nicely intuitive. With a little experimentation, you can figure out all possibilities. The music does a nice job of capturing the Arabic motif; the sound is competent. The graphics are a little below average, but the overall presentation is decent.



Genie is a good adventure game. It excels in capturing the style of ancient Arabian tales. The game is a bit linear, but given that some puzzles have multiple solutions, this is not a major problem. I found that Genie was slow at the start, but soon became engrossing. (Strategic Simulations Inc., 675 Almanor Ave., Suite 201, Sunnyvale, CA 94086-2901. 408/737-6800)



Let me lead an exploration team, Captain. I'm sure I'll be able to find clues our regular pilots and certainly our robots might miss. Something on Rhea and Gaea is controlling the attacks of the biota, sir. We must find out who or what is leading the life forms and destroy it.

Alien Legacy

Designed By: Ybarra Productions
Published By: Sierra On-Line
List Price: $45.99
For: IBM 386, 4MB RAM, MS-DOS 5.0, EMM386, VGA, 22MB HD, Microsoft Mouse, Sound Blaster/Adlib/PAS
Reviewed By: Fred Haslam

Legacy introduces a whole new genre: the strategy/adventure game. And the combination of these two styles works surprisingly well. Most of your time is occupied with the details of building colonies in a distant star system; but the mystery surrounding a previous expedition adds drive and flavor to what would otherwise be a "goal-free" game.

You control a colonizing vessel, stuffed to the gills with materials necessary to build self-sustaining cities on alien worlds. As commander you have numerous decisions before you. How many cities will you build? How will you structure their economies? How many resources will you assign to research and exploration? But overriding all of this is the need to discover the fate of the last expedition—and to stop the deadly machinations of an alien legacy.

The interface is fully intuitive, with online advisors helping you every step of the way. The music is good, striking just the right moods without being overbearing. But the sound effects are average. Artwork is good. There are several 3-D sequences during the game, mostly associated with events involving your advisors.

Being a strategy/adventure game, Legacy is in some ways unique. As a strategy game, it is decent. The balance of production is good, but combat is somewhat abstracted. The adventure part is very good. I found the pursuit of clues to be fascinating. (Sierra On-Line, P.O. Box 800, Coarsegold, CA 93614-0800. 209/683-4468)

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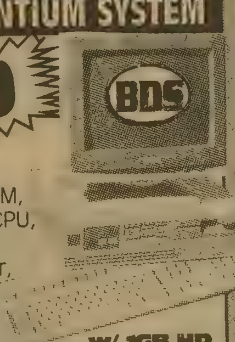

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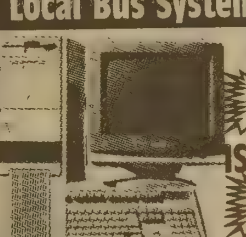

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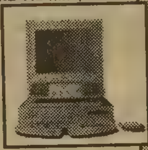

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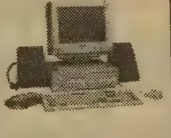

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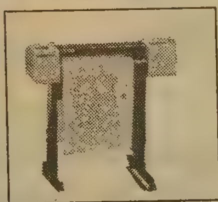

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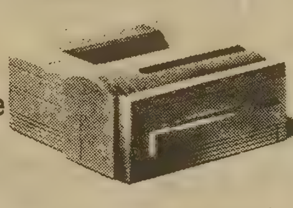

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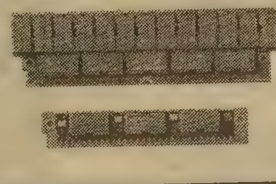

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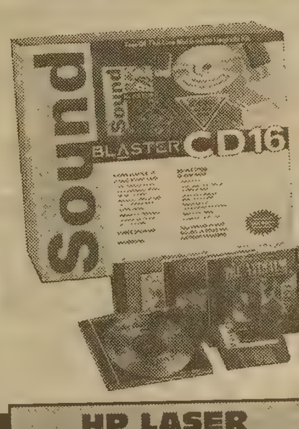

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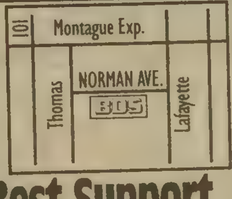

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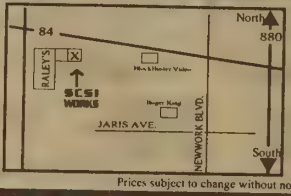

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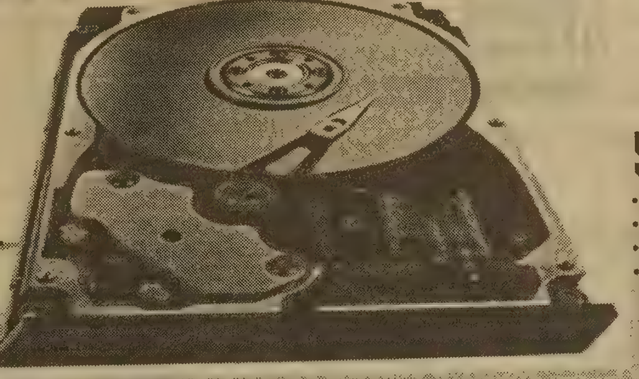

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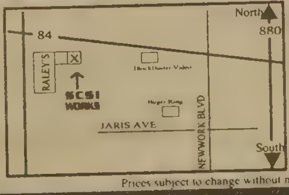

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2 MB Module	118
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T1000SE; XE	1 MB Card	119
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16MB 4x32-70	495

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4 MB	121125-002	225
Contura Lite 20/25		
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4 MB	129769-002	245
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4 MB	112534-001	189
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8 MB	116561-001	365
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4 MB	113132-001	199
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RISC 6000	16/32/64 MB	745/1490/2890

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Design Jet Plotter 4 MB	155
PANASONIC LASER	
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KXP4420/4450/4451- 1/2/3/4 MB	98/145/159/225
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OL400 1/2 MB Board	$99/129
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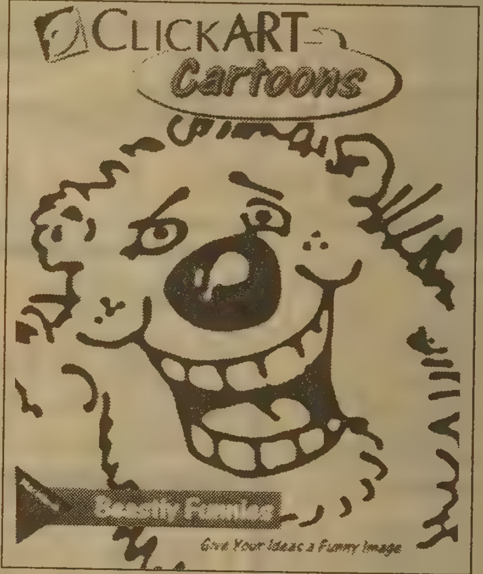
continued from page 140

PC Software Reviews

ClickArt Cartoons

Published By: T/Maker
List Price: $29.95 per package
Reviewed By: Lenny Bailes

The latest batch of ClickArt Cartoons from T/Maker is a bit more stylized than some of its previous offerings, but still falls into a predictable niche: generic, non-offensive sketches suitable for picnic announcements and company newsletters. Fans of the San Francisco *Farley* comic strip may enjoy the Bulletins & Newsletters collection, which was drawn by author Phil Frank. Two additional packages, On the Job and Beasties, were drawn by Karl Edwards, another San Francisco-based artist. Another two packages are also available: Parties & Events and Companies & Business.



Each kit includes an illustrated catalog of the contents, and an export program that allows you to transfer an image from T/Maker's library format to CGM, WMF, EPS, Adobe Illustrator, PCX, or TIFF format. (You can only browse titles in the Export program, you need the printed catalog to preview an image.)

The Beasties collection is the most humorous of the lot, and would be especially suited to children's newsletters, or illustrating children's stories in junior high school computing classes. The T/Maker

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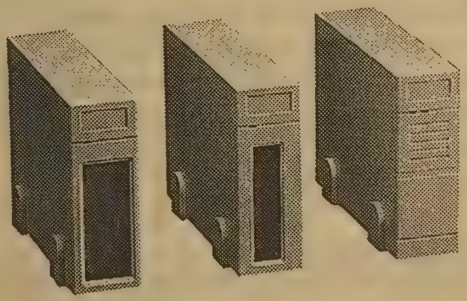

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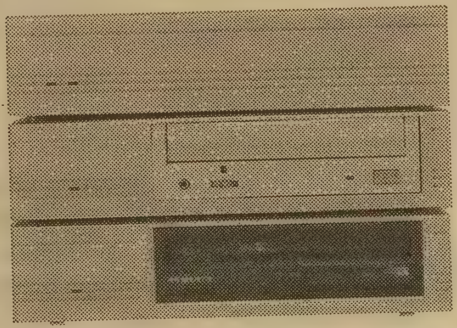

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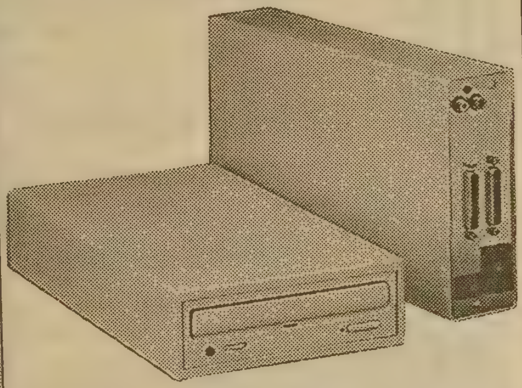

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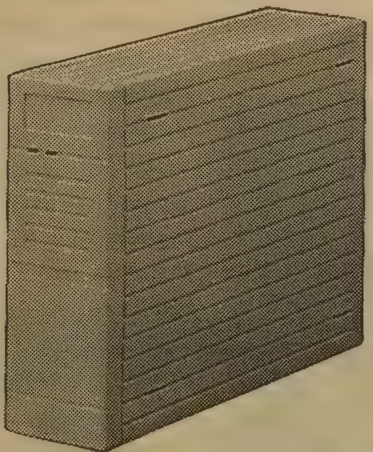

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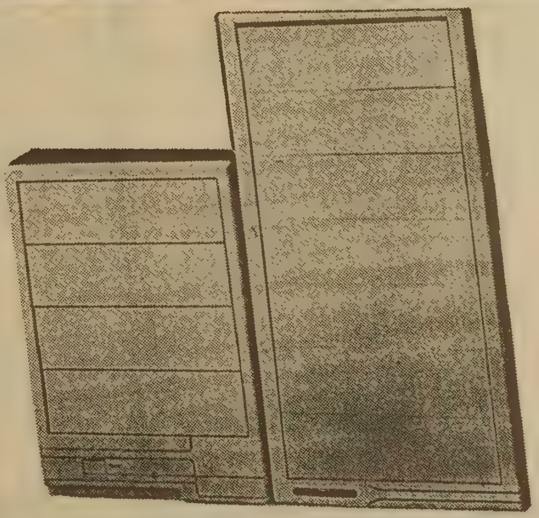

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486DX2-50/256C VLB	238	380	940	960	980	1000	1075
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486DX-33/256C VLB	197	342	895	915	935	955	1028
486SX-33/256C VLB	157	288	854	874	894	914	989
IBM 486BL-75/256C VLB	303	455	995	1015	1035	1055	1128
IBM 486SLC2-66/256C VLB	198	340	886	906	926	946	1028
486DLC-40/128C VLB	143	290	841	861	881	901	980
386DX-40/128C ISA	86	218	780	800	820	840	925
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library format is directly compatible with Print Shop and Print Shop Deluxe, allowing users of these packages to preview images directly, by inserting a library diskette in a floppy drive. These packages are also available in Macintosh versions. (T/Maker Corp., 1390 Villa St., Mountain View, CA 94041. 1-800-395-0195)

Earthquakes—Be Prepared!

Produced By: John A. Martin & Associates, Inc.

Distributed By: National Center for Earthquake Engineering Research, and John A. Martin & Associates, Inc., Earthquake Project

For: 386SX (or higher), 2MB RAM, VGA card (256 colors recommended), MS-DOS 3.1 or later, Microsoft Windows 3.1 or later, MSCDEX 2.2 or later

List Price: $54

Reviewed By: Mark Will

Earthquakes seem to be a way of life in California. To help you prepare ahead of time is the new CD-ROM Earthquakes—Be Prepared, from John A. Martin & Associates, Inc. The producers are structural engineers located in Southern California. Development of the CD was supported in part by a grant from the State of California, Department of Commerce, Office of Strategic Technology, under the provisions of the Alfred E. Alquist Earthquake Act.

The main menu consists of the following four sections:

Earthquake Preparedness Theater, with more than thirty minutes of narrated video clips, including how to strengthen your house (twenty-three minutes), safety in the workplace (seven minutes), and safety tips for children featuring Yogi Bear (seven minutes).

Earthquake Preparedness Guides, which consists of four parts, including planning guides, plans to make, steps to take, and checklists.

Understanding Earthquakes has three parts, including a photographic introduction to earthquakes, an earthquake history of California, and introduction to earthquakes.

Protecting Our Children From Earthquakes contains topics on coping with children's reactions, and on identifying and reducing content hazards in schools and homes.

Earthquake—Be Prepared! is written in Microsoft's Multimedia Viewer and has options for full text searching, copying text to the clipboard, annotations, and bookmarks. You can also jump to a related topic or picture by clicking on a colored underlined or dotted underlined word, respectively. (National Center for Earthquake Engineering Research, 716/645-3377. John A. Martin & Associates, Inc., Earthquake Project, 213/483-5571)

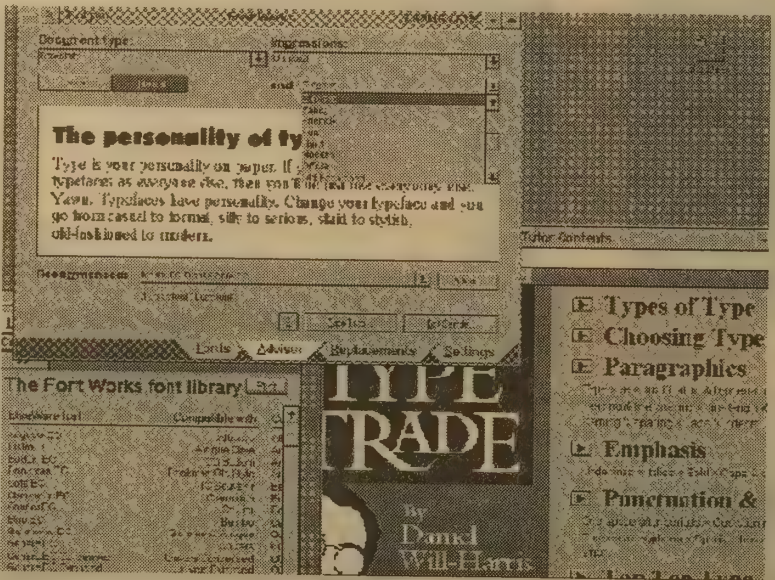
FontWorks For Windows

Published By: Elsewhere Corp.

List Price: $129.95

Reviewed By: Lenny Bailes

FontWorks is a combination font package for Windows that supplies over 150 individual TrueType typefaces generated on-the-fly from internal font outlines. FontWorks also lets you simplify the lists of installed fonts on your Windows application menus. If you have three hundred fonts on your system, FontWorks can let you hide 250 of them in named groups. These can be added or removed from application menus at will. When a document requests a font that is not on the current menus, FontWorks substitutes the closest visual match from either the listed or hidden fonts installed on your system.



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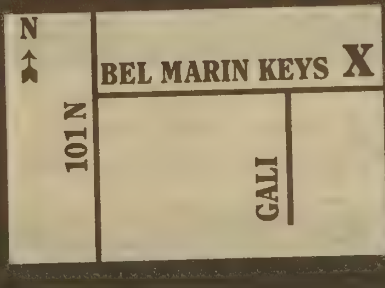

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The package includes 152 TrueType fonts that are equivalent to classic faces like Bookman, Century Schoolbook, Garamond, etc. The package also includes monospaced fonts and a few original typefaces. All fonts are provided with a 215-character Windows ANSI character set. Whereas 150 standard TrueType faces can occupy between 7 and 8MB of disk space, the condensed FontWorks outlines and the entire program occupy only 3.5MB. When you first request a FontWorks font in a document, there is a brief delay while it is built on-the-fly from its outline. Thereafter, font selection is transparent.

FontWorks allows you to control the list of fonts displayed on your application menus, displaying or turning off fonts individually or in preconfigured groups. The program is smart enough to provide close equivalents for document fonts missing from your system. For instance, if a document calls for a title heading in Hobo or Bitstream Cooper Black, but you don't own that font, FontWorks pops up a replacement page. You can either trust it to do an automatic replacement or ask for a preview of the suggested replacement. FontWorks provides four different methods for coming up with a font look-alike for the document: its internal PANOSE algorithm, a fallback to the font suggested by Windows 3.1's database, a user-specified custom replacement, or a generic "last resort" font.

The performance and print speed of applications is not noticeably affected by generating fonts from outlines. The package also includes a font selection advisor and online typeface tutorial written by Daniel Will-Harris. You may specify a document type, and a desired "look" and impression you want to create, and FontWorks will suggest a display/body typeface combination. The Daniel Will-Harris tutorial is a hypertext introduction to the basics of layout and selecting appropriate typefaces for different production jobs. (Elsewhere Corporation, 101 Stewart St., Suite 700, Seattle, WA 98101. 206/448-9600)

Amiga Software Reviews

Anim Workshop 2

Published By: Axiom Softwave, Inc.
List Price: $159.95
Reviewed By: Douglas J. Nakakihara

Anim Workshop 2 provides an easy way to create Amiga animations as well as process existing ones. It works in conjunction with either ADPro or ImageFX for image processing chores; this means that your source images can be in virtually any file format. You have total control over source file selection as well as resolution, screen mode, dithering, palette control, etc. For even greater capabilities, an ARexx script can pre-process each frame.

Animation formats 5, 7, and 8 are supported. The processing tools available include inserting/removing frames, flipping, compositing, reversing, scaling, separating into individual files, splitting into smaller animations, and stretching/squeezing to fit a certain frame count. Everything you would need to do can be done from this application.

Anim Workshop 2 can convert files as they are created and optionally delete the originals—a storage-saving feature if they are

Continued on page 212

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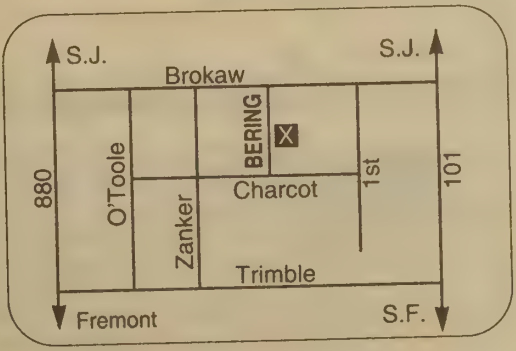

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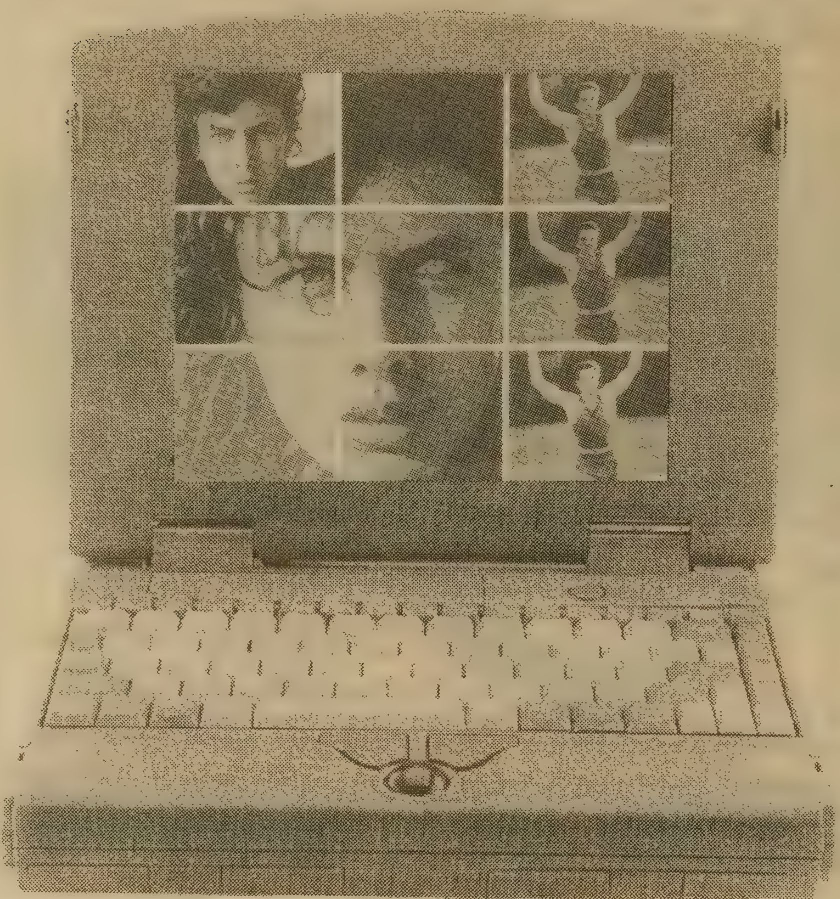

The Best has become even Better

This is what the review have to say about the Wedge ShowBOOK...

PC MAGAZINE

"The unit's overall performance on our tests was very good. The ShowBOOK ranked in the top five in all tests... The ShowBOOK's standard local-bus video came through to secure the top Graphics WinMark score of ***4.6 million*** *pixels per second..."*

- PC Magazine, Dec 21, 93

...Wait and see what they will say about our **Enhanced version.**

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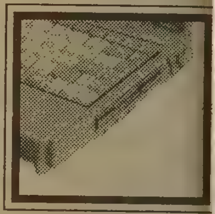
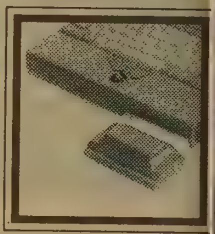


Hot Swap Batteries...

The standard two rechargeable NiMH battery packs allows for hot-swap of any unit without turning the notebook off. This feature allows for uninterrupted battery usage.

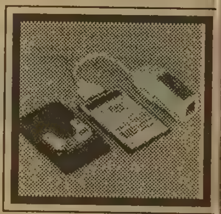


Trackball...

The 25mm trackball located in the center of the palm rest gives you the convenience during any GUI session. No need to carry a mouse and get entangled by the cord.

PCMCIA TYPE IV...

The industry-standard PCMCIA Type IV slot provides expansion for removable hard drives, data/fax modems, network adapters, SCSI adapters, voice mail adapters, sound adapters and other "Credit Card" technology options.



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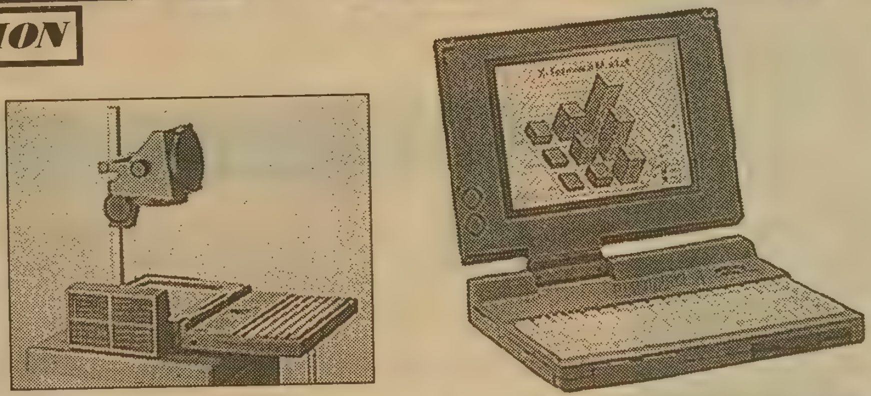

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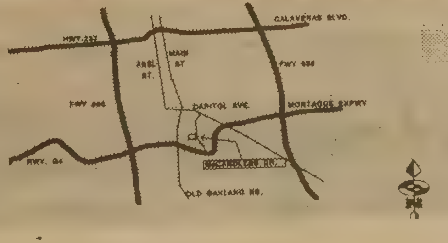

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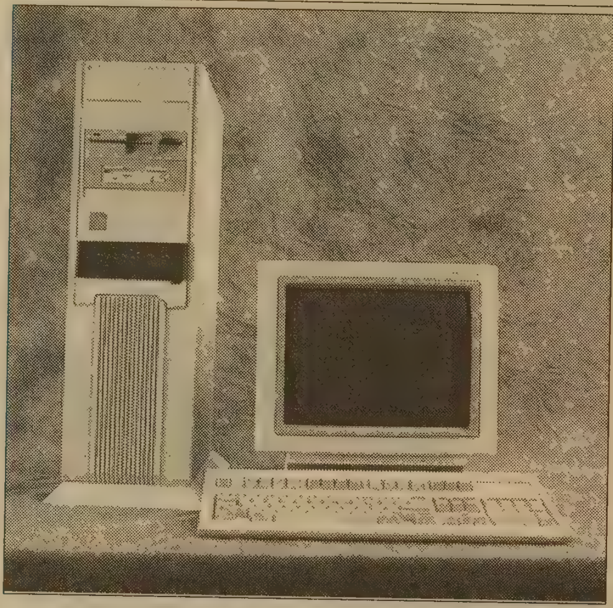

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- 8MB RAM expandable to 128MB
- Intel Pentium 90MHz processor
- 512K Cache memory
- Dual media floppy drive
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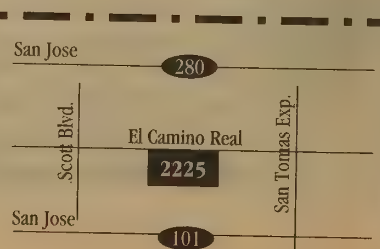

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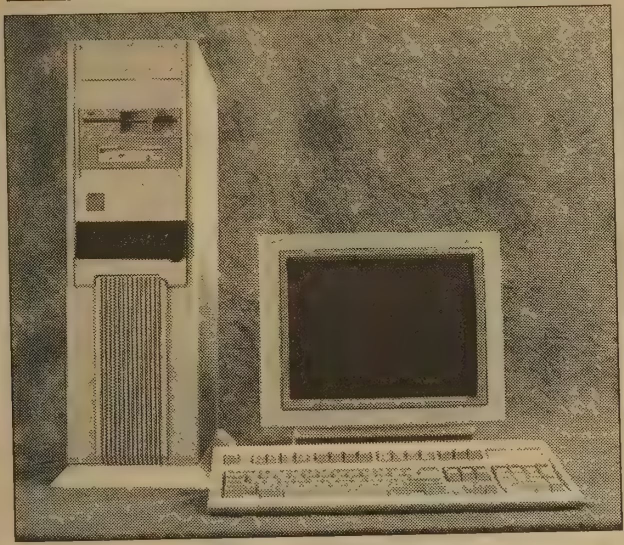

GENOA VESA Local Bus

- GENOA 486VL Motherboard
- 4MB RAM expandable to 32MB
- AMD DX2-66MHz processor
- 256K Cache memory
- 3 32-bit VLB expansion slots
- 3.5" 1.44MB floppy drive
- VLB IDE HD/FD controller
- 2 serial, 1 parallel & 1 game port
- Mid Tower with power supply
- 101-key enhanced keyboard

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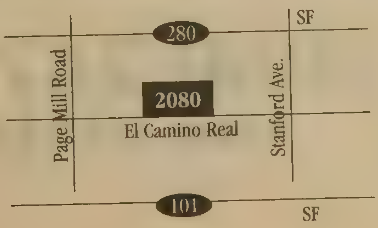

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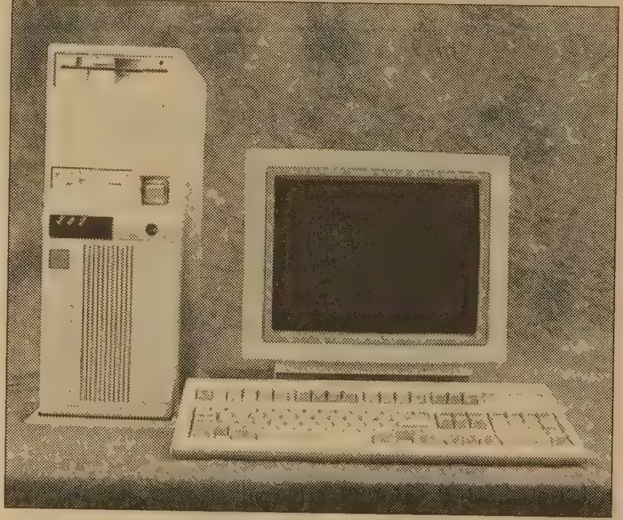

Green VESA Local Bus

- Green VLB Motherboard
- 4MB RAM expandable to 32MB
- AMD DX2-66MHz processor
- 256K Cache memory
- 3 32-bit VLB expansion slots
- 3.5" 1.44MB floppy drive
- VLB IDE HD/FD controller
- 2 serial, 1 parallel & 1 game port
- Mid Tower w/ power supply
- 101-key enhanced keyboard

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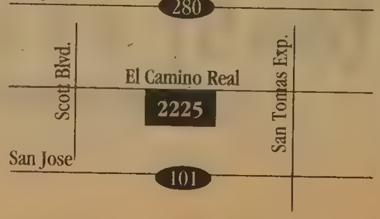

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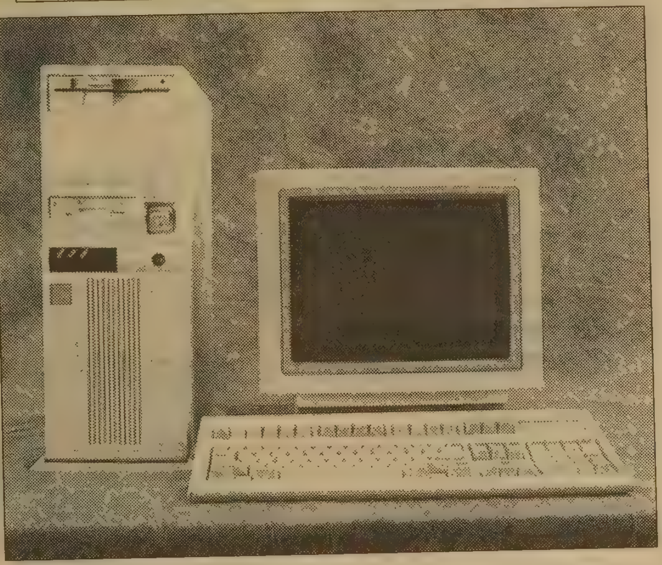

486 DX-33 VLB

- 486VLB Motherboard
- 0MB RAM expandable to 32MB
- AMD DX-33 processor
- 256K Cache memeory
- 3 32-bit VLB expansion slots
- 3.5" 1.44MB floppy drive
- VLB IDE HD/FD Controller
- 2 serial, 1 parallel & 1 game port
- Mid-Tower with power supply
- 101-key enhanced keyboard

$389

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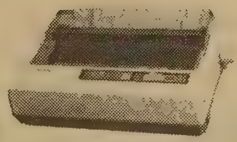

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Quiet Printer
*remanufactured
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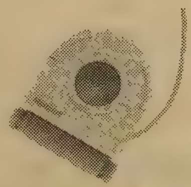

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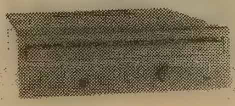

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Complete Kit, I/F, Driver, Cable
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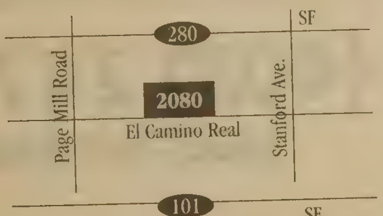

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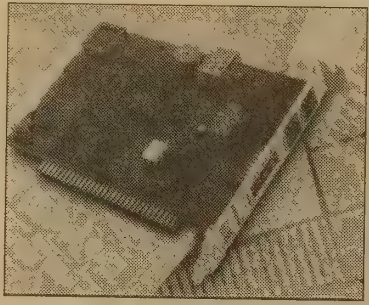

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The 14.4 Fax Modems

- Internal PC version
- V.42/MNP5
- Easy installation
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External	$139.99
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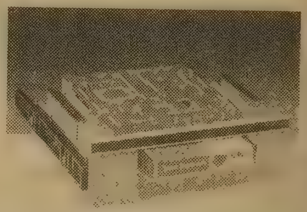

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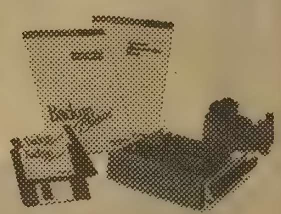

- QIC-80 and AccuTrak 250 compatible
- 250MB capacity
- Tape cartridge included

HCC250 **$139**

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14.4 ADC14	169.00
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XJack 1144 ADC1144X	249.99
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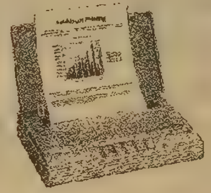

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BJ-10ex Portable Inkjet

- Prints up to 84cps
- Weighs only 4 lbs.
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Great for notebooks!

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**Refurbished Printer*

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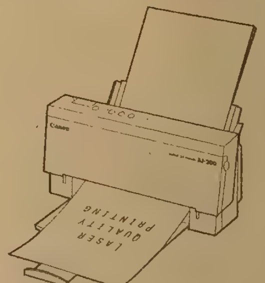

- Prints up to 248cps
- 360dpi resolution
- 100-page sheet feeder

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**remanufactured printer*

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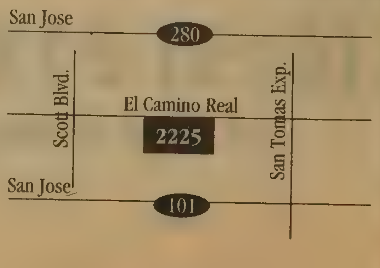

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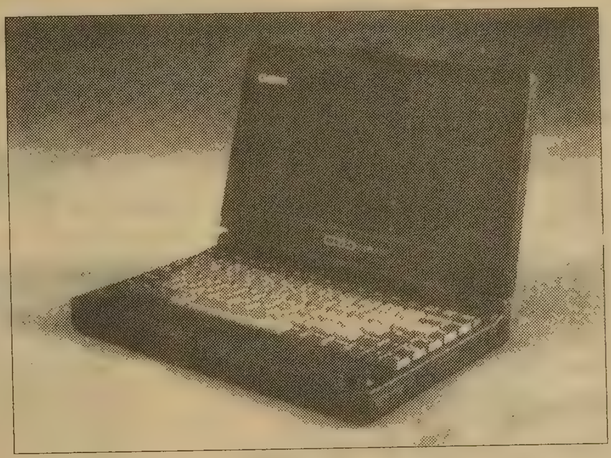

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CPU	Hard Drive	Mono	P. Color
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intel inside

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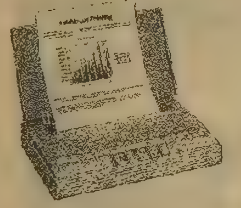

BJ-10sx Portable Bubble Jet Printer

- Prints 30% faster than 10ex
- Weighs 10% lighter than 10ex
- Text graphics up to 360dpi
- Uses plain paper & transparencies
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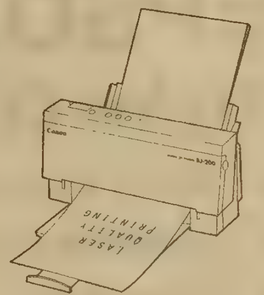

- 360dpi resolution
- Prints up to 248cps
- 100-page sheet feeder
- 7 resident fonts
- Hold up to 10 envelopes
- 2 Year Warranty

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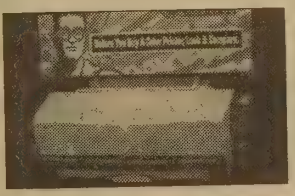
BJ-230 Wide Carriage $399

BJC-600 Color Ink Jet Printer



- 360 dpi
- 100-sheet ASF
- 240cps draft, 170cps high quality
- 16.7 million colors available
- 64 nozzles per color
- 2 year warranty

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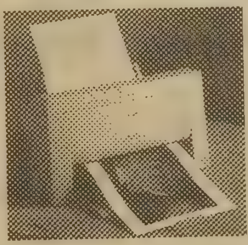

- 496cps printing speed
- 720x360 dpi
- 16.7 million colors
- 20 scalable TruType fonts
- 2 year limited warranty

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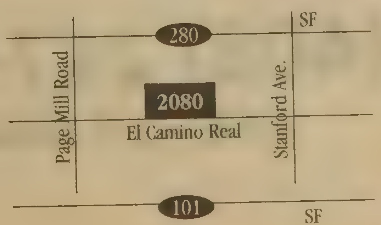

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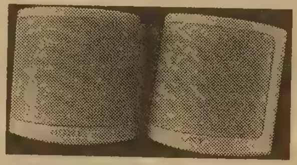

SRS-PC30 Active Computer Speakers

- Built-in amplifiers
- Monitor mounting kit
- AC power adapter
- 3 watts power output
- Bass boost switch

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SONY

GDM-15sf 15" Trinitron Display

- 14.0" Max viewing area
- .28mm dot pitch
- 1280x1024 resolution
- 50-120Hz refresh rate
- 3 year warranty

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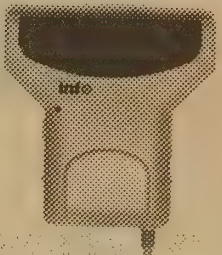

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- Photo Plus Software
- TWAIN compliant
- Info Technician software

$79.99

SC-480WG 256GS w/ OCR $89.99

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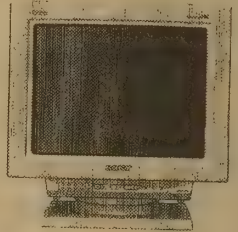

GDM-17Se 17" Trinitron Display

- 1600x1200 max resolution
- 25mm dot pitch
- 50-150Hz refresh rate
- Energy Star compliant

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720dpi!

- 720x720 max resolution
- 48 nozzles per color
- 240 cps @ 12 cpi
- 5 bitmap, 4 scalable font
- 2 year limited warranty

Picture-like output!

$599

Stylus 400 Ink Jet Printer

New!

- 360dpi
- 120cps printing speed
- 2 year warranty

$199

Stylus 800 Ink Jet Printer

- 150cps printing speed
- 360dpi resolution
- 100 sheet feeder
- 2 year warranty

$199

Stylus 800+ $249

ActionLaser 1600 600dpi Laser Printer

- 6ppm
- PCL-5e
- 45 built-in fonts
- 2 year warranty

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ActionLaser 1100, 4ppm, PCL-5 ....$499
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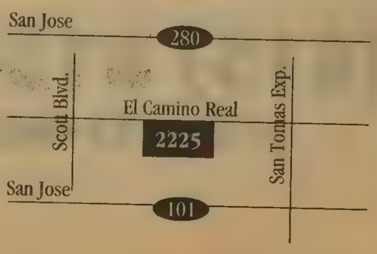

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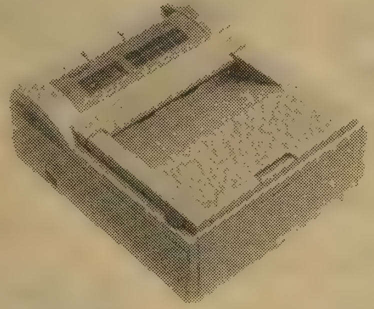

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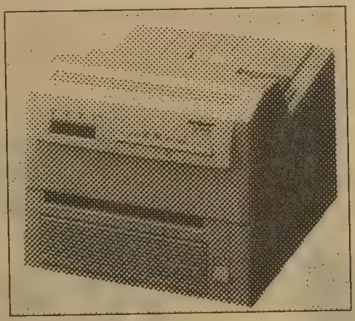

- 6 ppm
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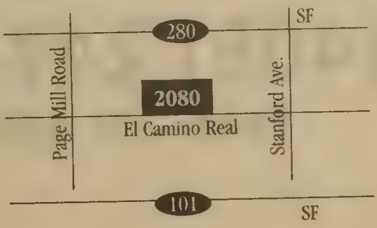

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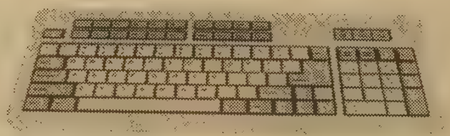

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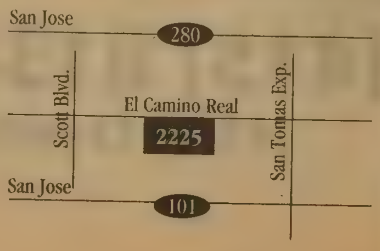

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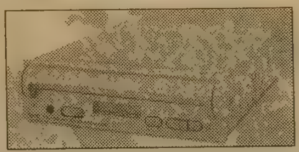

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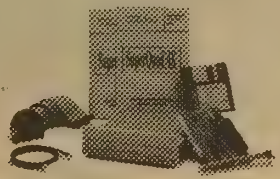

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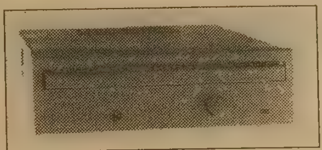

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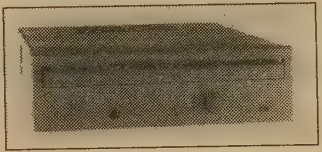

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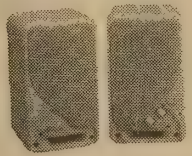

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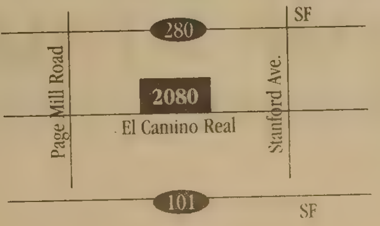

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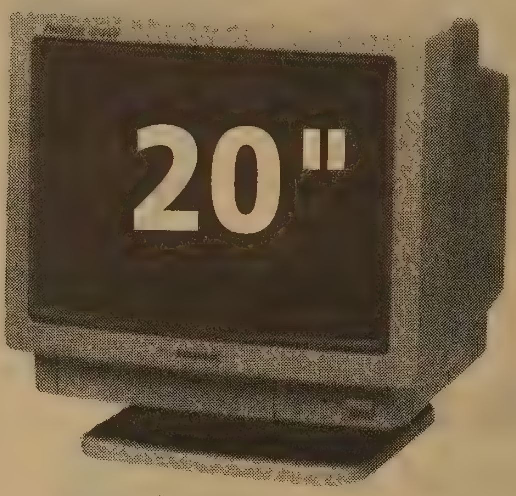

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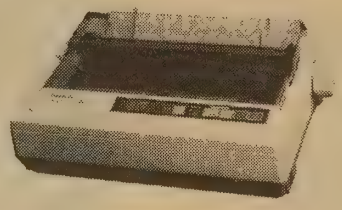

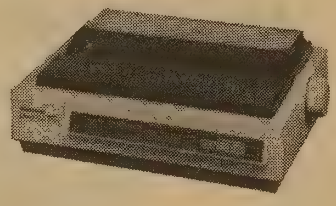

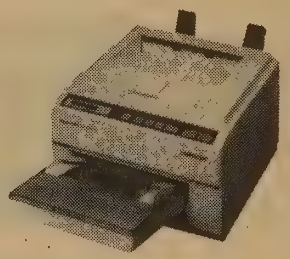

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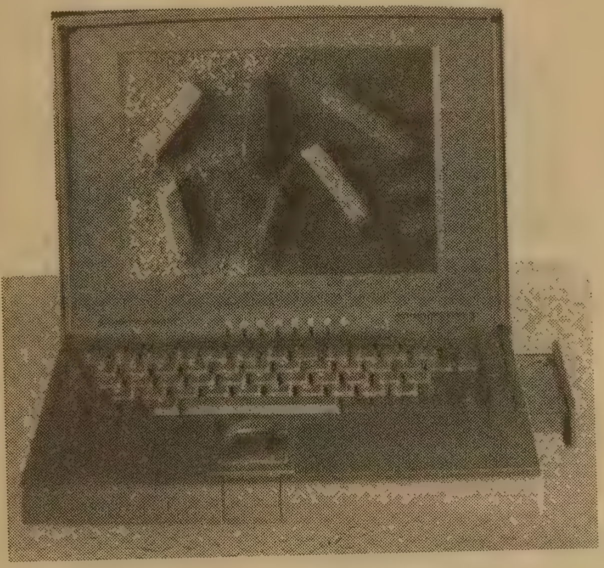

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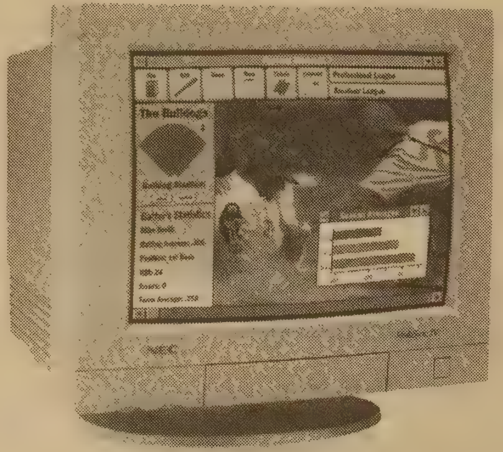

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Superior display performance
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- 1024x768 non-interlaced
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- 70Hz vertical refresh rate

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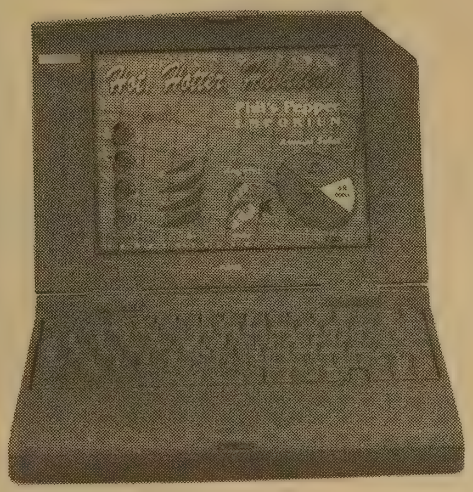
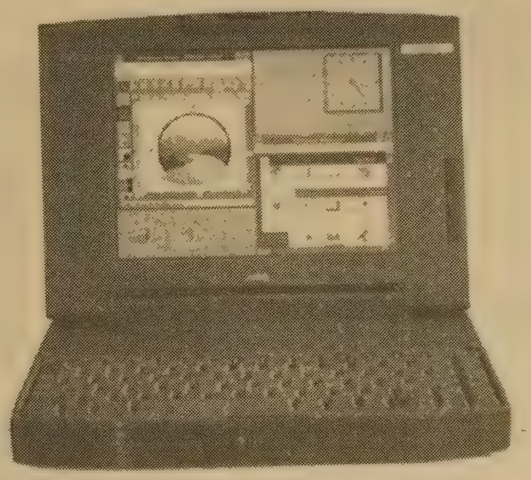
NEC Versa® Notebooks





Versa® S *Sub-Notebook*

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- Factory-installed Software:
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  On-Line User's Guide, PCMCIA Guide
- Advanced pointing device:
  SurePoint™ integrated mouse
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  On-Line User's Guide, PCMCIA Guide
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- 3 Years Standard Return-To-Factory Warranty
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Versa S

CPU	Hard Drive	P. Color	A. Color
SX-33	210MB	$2299	$3099
DX-50	260MB		$3699

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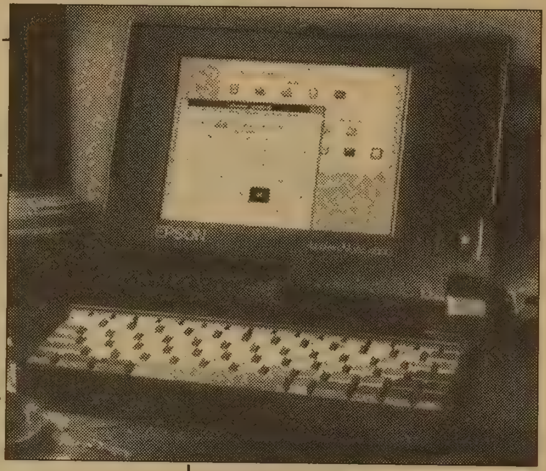

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- Fast: 486SLC/33MHz microprocessor
- 4MB of RAM, expandable to 8MB
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HIGH-END FEATURES

- Type II PCMCIA slots for PC cards
- Built-in 2-button trackball
- Attractive carrying case
- MS-DOS and Windows pre-installed

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- 3.85 lbs. including battery & hard drive
- Small: 1.5" x 10" x 7.6"

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- 1 year limited warranty with Epson's exclusive Extra Care Road Service
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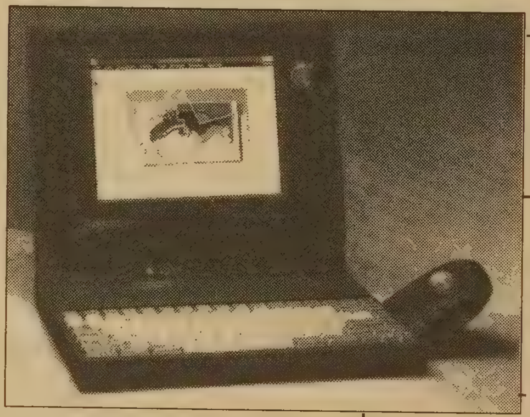

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- Handsome carrying case
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HIGH-END FEATURES

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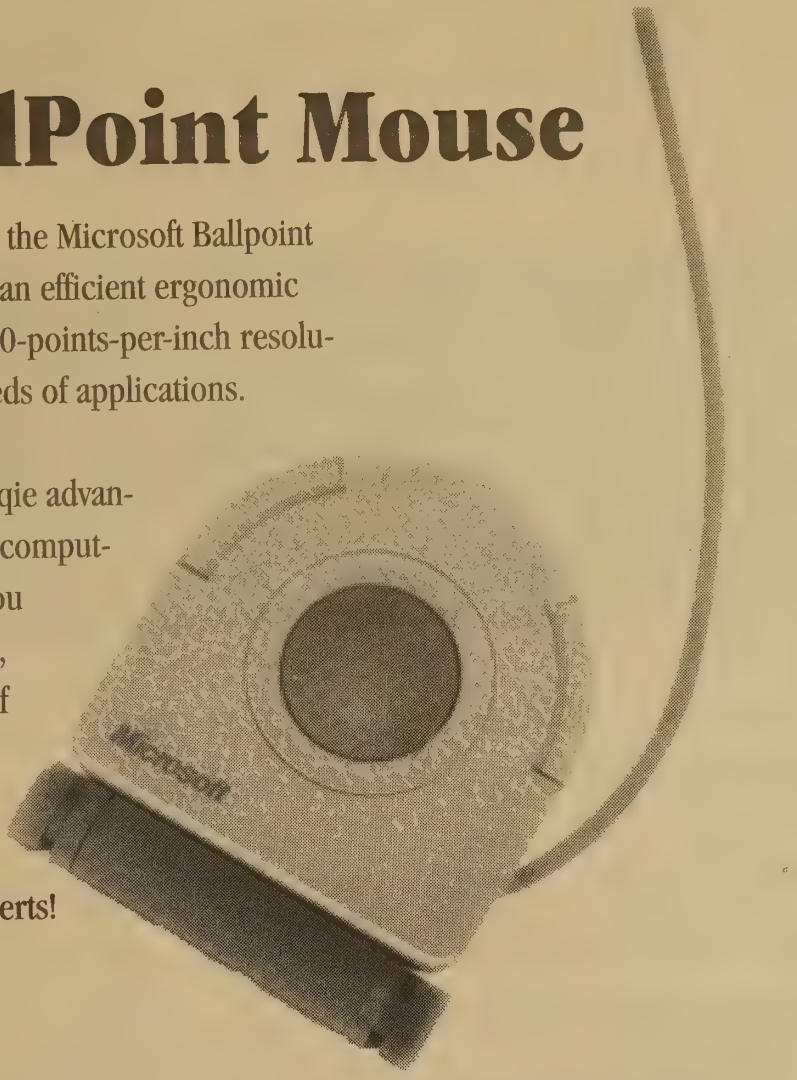
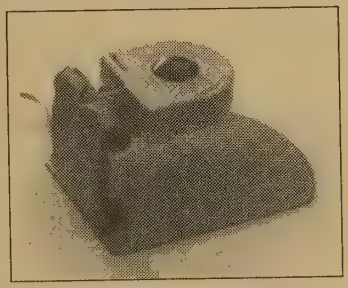
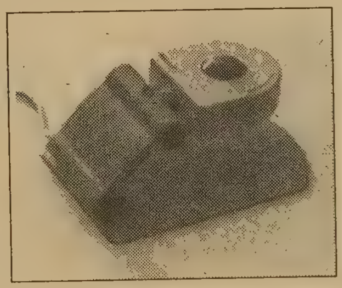
The Microsoft Ballpoint mouse: It's a sensational innovation from Microsoft, the mouse experts!



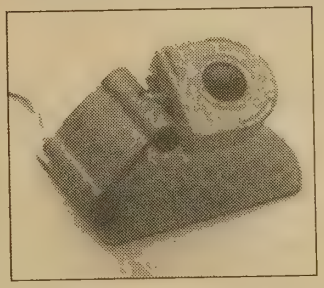
Ready...



Tilt...



Swivel!



Microsoft® *BallPoint Mouse* **$19.99**

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Microsoft

OS/2 *continued from page 72*

swap one discharged battery for additional spares while the second is working.

There should be an intelligent power management system (which shuts off the hard drive, screen, faxmodem, etc. when not in use), and a resume feature (which at power-on returns the machine to its state at last shutdown without booting). These features are usually available only under DOS/Windows, although they are more important under OS/2.

The Cypress 9200 Notebook

The second column in Table 1 shows how the Cypress 9200 fare on the OS/2 requirements, and Table 2 compares the performance of the evaluation unit to that of a desktop.The difference in configuration were as follows:

	Desktop	Cypress
CPU	486DX/33	486DX4SI/100
Bus	EISA	ISA
RAM	28MB	16MB
Video RAM	2MB	1MB
Hard disk	SCSI	IDE

IBM has just released a new beta Card and Socket Services driver for PCMCIA, which it tested on several notebooks, three based on the same Cirrus Logic chipset as the Cypress. One user was able to make the driver work with the Cypress by configuring it for a Panasonic notebook and using an Intel modem. I have a Megahertz XJ2144 faxmodem, and even though I tried all three Cirrus-based configurations and the OS/2 driver recognized the faxmodem, both OS/2 and VDM communication sessions crashed. Neither did the Megahertz OS/2 Card and Socket Services driver work—the Megahertz DOS drivers worked smoothly with the Cypress and, oddly, I was sometimes able to run VDM communication sessions without any OS/2 driver. PCMCIA EasyPlay compatibility is currently a very shaky proposition under OS/2.

> **There is a tradeoff among color, battery life and price.**

Four megabytes of RAM is standard; the tested configuration had 16. You can expand RAM in certain increments to 36MB as indicated in Table 1 (beyond 16MB the memory board must be replaced with a different one, and Cypress has a trade-in policy). The memory and boards are proprietary, but the expansion can be done by the user.

My monochrome unit was legible at most screen angles (depending on your preference, the video can be reversed by pressing two keys). The size of the screen is 9.5", but the dual-scan and active matrix

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Table 2: Performance

		Desktop	Cypress
Floating Point (seconds)		1.219	.312
Integer (seconds)		7.657	2.219
Data Movement (seconds)		10.094	3.281
Memory Access (seconds)			
range size	256	2.969	.969
	512	2.969	.969
	1024	2.969	.968
	2048	2.969	.969
	4096	2.969	.969
	8192	3.000	.969
	16384	3.875	1.000
	32768	3.844	2.937
	65536	4.093	2.281
	131072	4.343	3.407
	262144	4.687	3.531
	524288	4.938	5.250
	1048576	5.563	6.625
	2097152	5.594	6.406
Total		54.782	37.250
Sieve (iterations/seconds)		500/3.41	500/1.44
(it/sec)		146.80	347.95
Cycles Processing rate (cycles/sec)		17.647M	48.481M
Dhrystone (Dhrystones/sec)		32388	75472
500,000 iterations in (seconds)		15.44	6.63
Disk Write (MB/sec)		.662	.427
Disk Read (MB/sec)		1.097	.512
Disk Random Access (MB/sec)		.344	.375
Metafile (seconds)		23.188	5.875
Bitmap BitBlt (seconds)		11.343	13.438
Bitmap Scale (seconds)		26.282	20.375
Text Display (seconds)		6.938	4.782
Simple Vectors (seconds)		1.937	3.907
Complex Vectors (seconds)		80.907	8.438
Filled Vectors (seconds)		37.469	10.125
Towers of Hanoi Time to solve (sec)		63.84	40.28
CPU Score		31.8	99.9
Composite Score		50.0	51.0

color versions have 10" screens. All support VGA resolution, but have a port for a 1024 x 768 external monitor.

The notebook came with an OS/2 SVGA driver developed by Cirrus Logic for this purpose but, unfortunately, it was intended for OS/2 2.0, and does not work with 2.11 (Cirrus has not announced any upgrade).

I tested the external port with a Freelance presentation, a VGA LCD projection panel, and the ProPresenter remote controller, which has a beta OS/2 driver. Except for the poor quality and low resolution of the LCD display, everything worked as expected.

As Table 1 shows, there are several (removable) hard disk options, which are quite fast.

The Cypress has two metal-hydride batteries installed at its bottom, upfront. When one is exhausted the other kicks in, and the AC adapter is charging while the computer is used. Hot swaps are possible, and an optional charger is available. The hard drive can be shut off if not in use under DOS, but not under OS/2. There is no equivalent feature for the screen, and no resume mode. I got about two hours worth of continuous OS/2 work out of both batteries.

Comments

The Cypress notebook measures 8.75" x 11" x 2.25" and weighs about 6lbs. with the two batteries. Its keyboard could do with enlargement of some of the keys, some angle, and some key travel and click. There is a built-in trackball, and the AC adapter is universal but separate.

When the Cypress batteries are being charged, their surface heats up and the section of the screen that comes into contact with the heat when the cover is closed becomes lighter in color and hard to read, but only for a brief time.

The Cypress fares rather well on most OS/2 requirements, and my subjective impression of its performance was also good. Issues that need addressing are compatibility with the IBM OS/2 Card and Socket Services and a variety of popular PCMCIA cards an SVGA driver (for both the screen and external video port), and intelligent power management and resume mode under OS/2. Longer-life batteries would reduce the need for more spares.

IBM is currently beta-testing a lighter version of OS/2 which is claimed to be less demanding and, thus, better suited for notebooks. Even so, chances are that the above features will still be a good idea.

It's unlikely that you will find a notebook which fulfills all of these criteria, as well as your other requirements. Even if you do, it probably won't be very affordable. This means that you will have to compromise and make the best tradeoffs for your specific needs and preferences. The Cypress 9200 is an OS/2 candidate worthy of your consideration. (My thanks to Sammy and Thomas of Cypress Computer for their cooperation on and help with the evaluation.) ■

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RESOURCES:

Cypress 9200 Notebook, $2790
(Monochrome display, 64 grayscale; DX4-100MHz; 250MB HD; 16MB RAM. For dual scan add $480; for DX2-66 subtract $450; for active matrix color add $1460)
Cypress Computer Inc.
26120 Eden Landing Rd., Ste. 6
Hayward, CA 94545
(510) 786-9106
(510)786-9553 fax

ProPresenter
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(916)652-9286 fax

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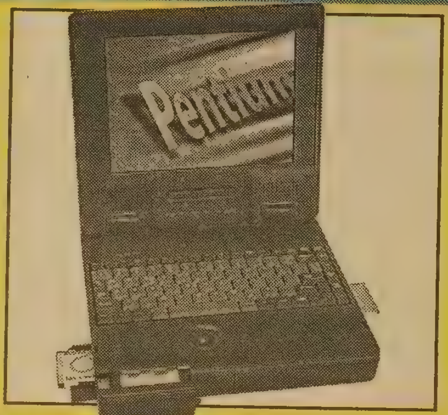

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PCMCIA Fax 14.4/14.4	199		

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DUAL SCAN	PENTIUM 66	$2999	$3099	$3199
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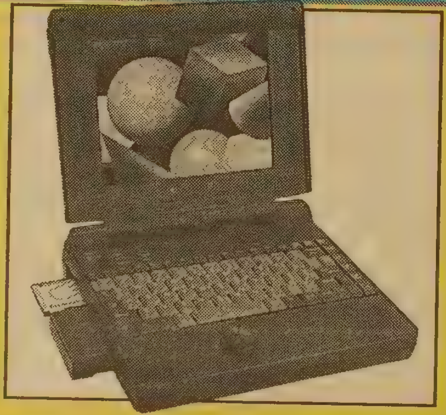
ACTIVE MATRIX	PENTIUM 66	$4099	$4199	$4299

486 VESA LOCAL BUS MULTIMEDIA NOTEBOOK



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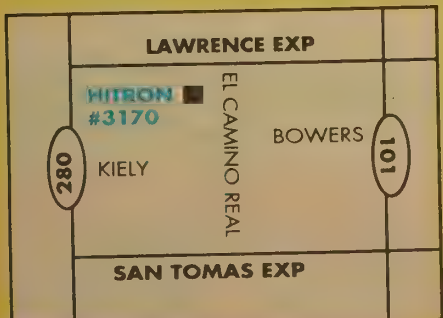

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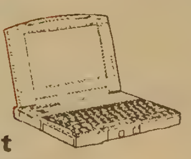

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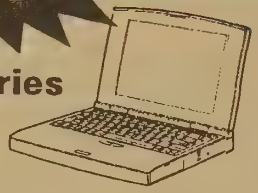

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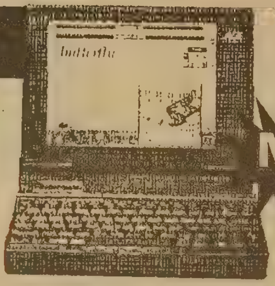

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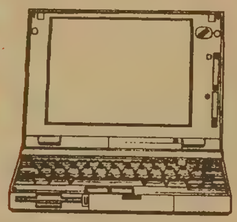

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Accounting...*continued from page 66*

corporations, see "Definition of Personal Service Corporations Vary," in *Taxation for Accountants*, July 1992, Warren Gorham Lamont (reprints available).

Body Shop Consciousness

A frequent gripe among software contractors is that it's getting harder to find work without going through a body shop. Since employee leasing agencies skim off the top, less is being passed on to the actual worker. And, as a mere employee of the body shop, your ability to claim business expense deductions is severely restricted. Also, you might not take a fancy to the agency's retirement plan.

RESOURCES:

For complimentary reprint of articles mentioned here, contact:
David Simon, CPA
MS, Taxation
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Employers use these types of agencies to eschew a host of costs and burdens associated with hiring technical professionals. One of those risks is that a worker purporting to be an independent contractor may be determined to be a common-law employee by the taxing authorities, tossing a wrench into the works for both service provider and recipient. By using third-party intermediaries such as employee leasing agencies, reclassification risks can be transferred to an intermediary.

Another benefit that agencies offer is reduced unemployment insurance taxes. Unemployment tax is imposed on the first $7000 of wages every time a worker changes employers. By going through a body shop you can change work assignments without changing employers, thereby greatly reducing total unemployment taxes. (For more information on this, see "A Hidden Tax on Technical Workers," by David A. Simon and Jennifer R. Cherniss, in the May 16, 1994, issue of *MicroTimes*.)

However, you shouldn't need an unrelated intermediary charging an arm and a leg to work this magic. Properly structured, any corporation should be just as good as a true blue employee leasing agency, and probably cheaper. So get off your mousepad and be your own employee agency!

It's The Economies Of Scale, Stupid

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Developers, programmers, and other technical workers tend to get caught between that level of income requiring sophisticated tax planning, and the level at which they feel they can afford it. Sharing the costs through a shared corporation may be the solution for many, but your own sense of your ability to generate revenues will indicate which path is best for you.■

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Specialty	**Expert**

What software operating systems does your business support?

MS-DOS☐ Windows☐ UNIX (specify variety)__ **O S / 2☐ Macintosh☐ Other** (specify)___

What is your multimedia specialty?

CD Titles☐ Video☐ Desktop Publishing☐ Production☐ Hardware☐ Software☐ Software Development☐

List the three top-selling brands sold at your store in 1994:

____

What special value-added services (e.g., service, training, support, warranties, return policy, etc.) does your business offer? (Please keep responses under 25 words or we will edit them to fit available space.)

____

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Are you a vendor-authorized sales, service, training, and/or support source?
If so, please list up to five vendors (e.g., Sun, Novell, Hewlett-Packard, Compaq) who have authorized your business to provide these services, and check the areas for which you're authorized.

Vendor	**Sales**	**Service**	**Training**	**Support**

I certify that all the statements made in this survey are true.

Name: ____________________ **Signature:** ____________________

Title: ____________________ **Date:** ____________________

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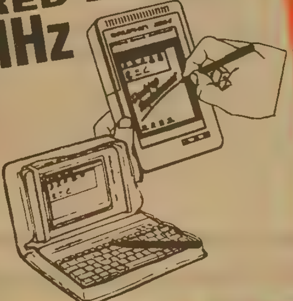

- 486SLC-25MHz CPU
- 4MB RAM
- 1.44MB External Floppy Disk Drive
- Pen with Drivers
- 6" Diagonal, backlit LCD screen
- 40MB Hard Drive
  VGA 640 x 480 resolution
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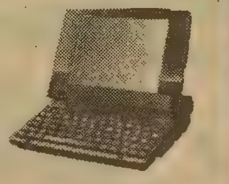

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MS DOS • Windows
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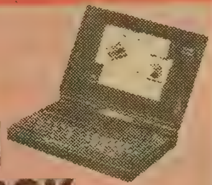

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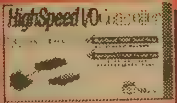

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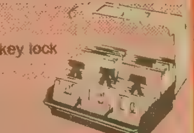

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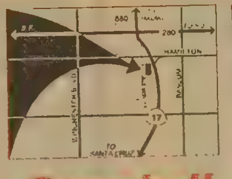

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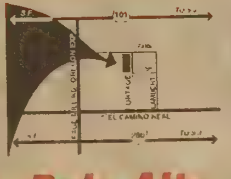

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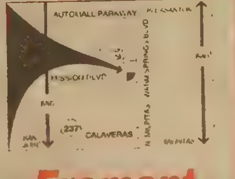

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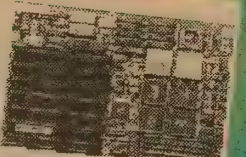

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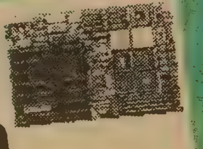

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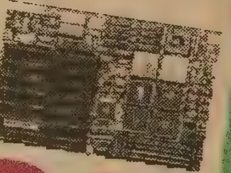

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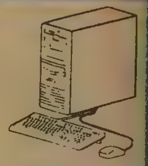

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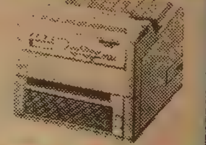

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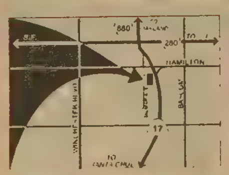

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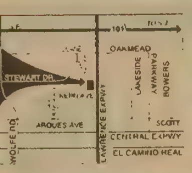

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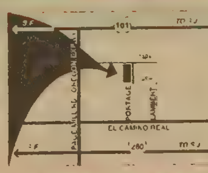

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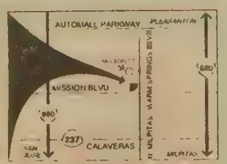

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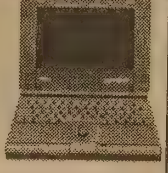

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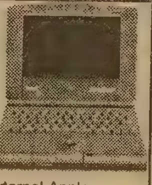

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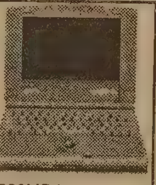

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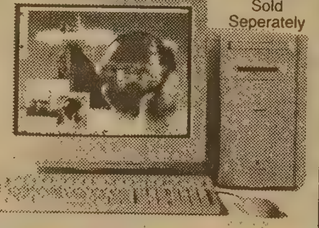

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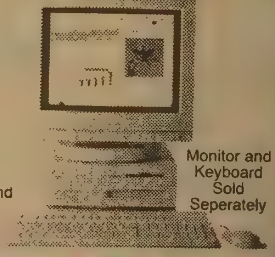

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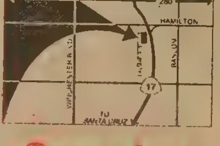

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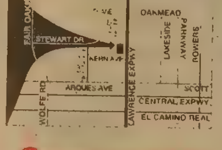

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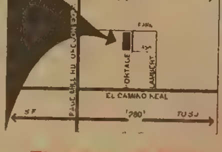

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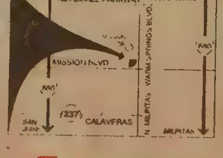

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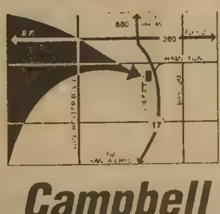

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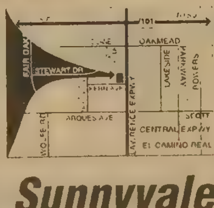

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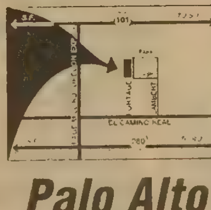

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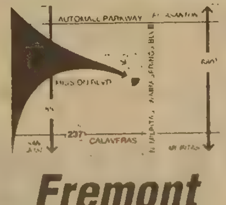

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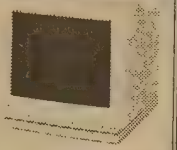

The new Apple® Color Display provides the high quality and practical ergonomic design you expect from Apple®. And its enhanced electronics allow this 14" monitor to display full-color images with photographic quality. The display's low, stable center of gravity keeps it from being easily tipped over, and its built-in tilt-and-swivel base make adjustment easy.

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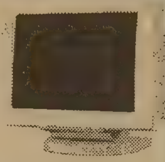
Apple® Macintosh® 14″ Color Display



The Macintosh® Color Display offers all of these benefits—and sets new standards for performance. With this display you'll see right away that lines are perfectly straight. Edges are sharp. Colors are pure and uniform. And image definition is crystal clear over the entire area of the screen, even in your finely detailed drawings.

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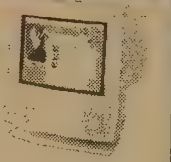
Apple® AudioVision™ Display



AudioVision™ 14 Display integrates high-quality stereo speakers, microphone, and high-contrast display into a single, sleek package. Speakers deliver CD-Quality sound . Display Quality:

- 14-inch screen, 640 horizontal pixels by 480 vertical lines (at 70 dots per inch)
- Trinitron color picture tube with improved electronics for higher brightness, high contrast and uniform contrast

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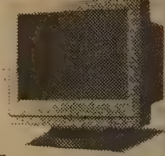
Apple® 17″ Color Multiple Scan Display



- Multiple-scan technology allows you to adjust resolution
- 17-inch screen Sony Trinitron tube
- Comes with a tilt-and-swivel base that allows you to position the monitor for optimal viewing comfort
- Complies with the EPA's EnergyStar conservation guidelines
- Adjustable resolution through software (included): Selectable from 640 by 480 pixels to 1024 by 768 pixels

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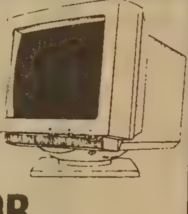
TOSHIBA MULTIPLE FREQUENCY FLAT SCREEN 17" COLOR MONITOR



Resolution selectable from VGA to 1024 x 768, with high resolution graphics. DAC (Dynamic Astigmatism Control) focus system with .31mm dot pitch and Invar Mask. Remanufactured to original factory specifications.

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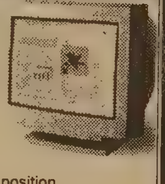
Apple® 20″ Color Multiple Scan Display



- Multiple-scan technology allows you to adjust resolution
- 20-inch screen Sony Trinitron tube
- Comes with a tilt-and-swivel base that allows you to position the monitor for optimal viewing comfort
- Complies with the EPA's EnergyStar conservation guidelines
- Adjustable resolution through software (included): Selectable from 640 by 480 pixels to 1152 by 870 pixels

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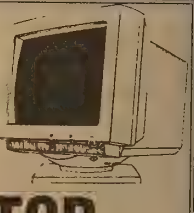
MAGNAVOX 640 x 480 14" MAC COLOR MONITOR



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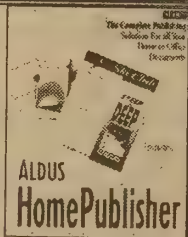

A complete publishing package that lets you turn out first-class publications – newsletters, brochures, flyers, labels, calendars and lots more. Write and edit without leaving the program, print crisp and clean at any size, and correct mistakes quickly.

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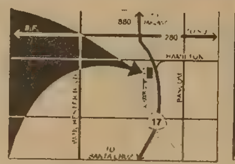

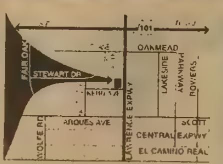

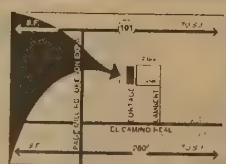

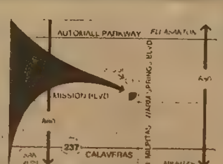

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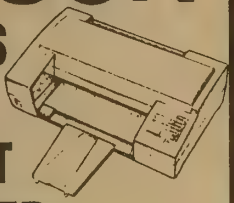

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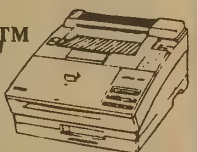

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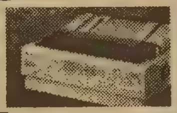

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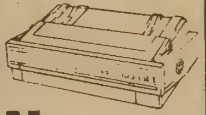

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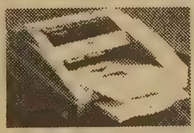

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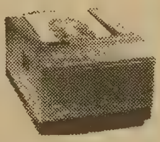

- 300 X 300 dots per inch • Printer speed up to to 4 pages per minute
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- Serial/Parallel/AppleTalk interfaces

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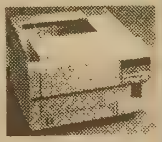

- 600 X 600 dots per inch
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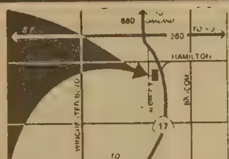

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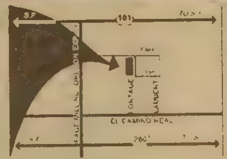

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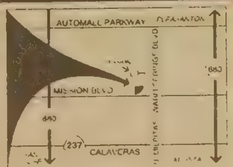

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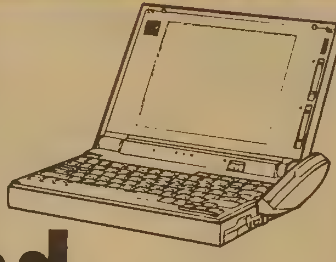

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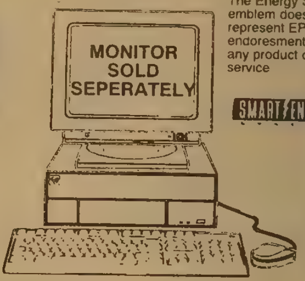

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Intel 486SX2-50MHz CPU • 253MB Hard Drive • 4MB RAM 3.5" 1.44MB/5.25" 1.2MB Floppy Drives • Mouse and Keyboard Internal Modem • Local Bus SVGA **Preloaded Software:** DOS 6.0 • MS Windows • Prodigy • P/S1 Tutorial, Index, Fitness, Virus check PS/1 Edition American On-line • **IBM Quality & Reliability:** The PS/1 Expert is built to IBM's exacting standards. • **Support and Service:** The exclusive online PS/1 Club™ answers your computing questions, 24 hours a day,
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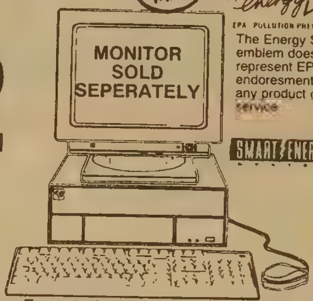

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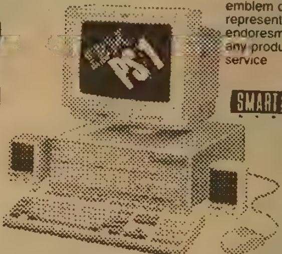

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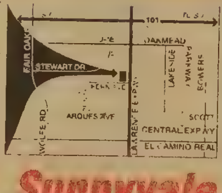

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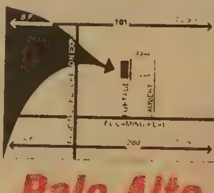

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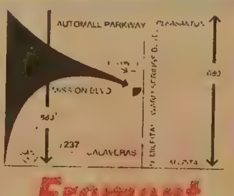

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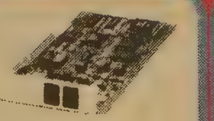

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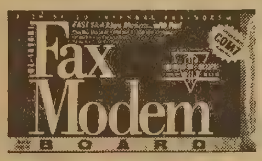
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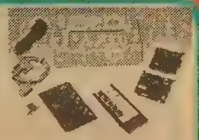

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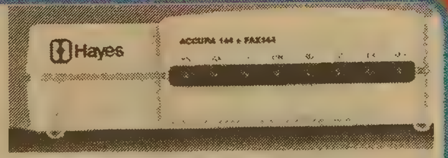
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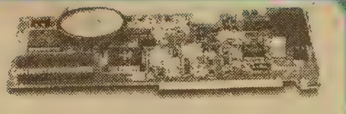

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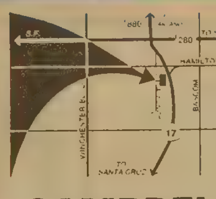
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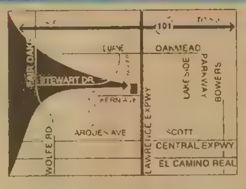
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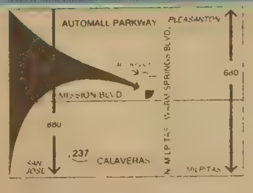
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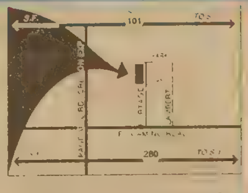
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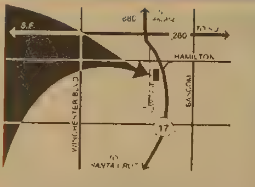

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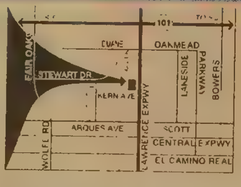

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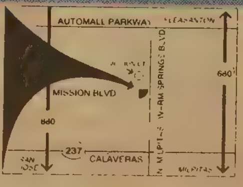

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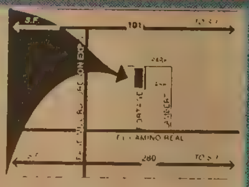

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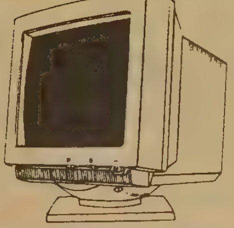

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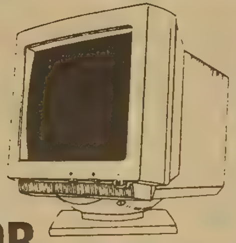

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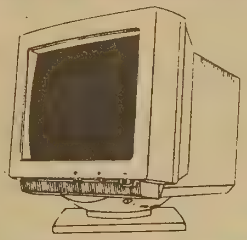

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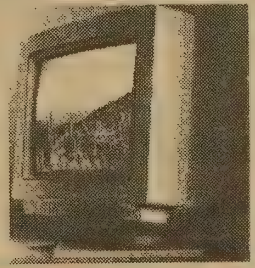

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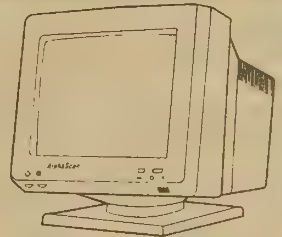

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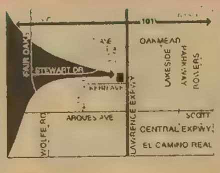
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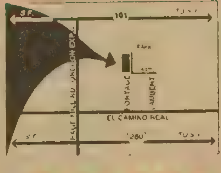
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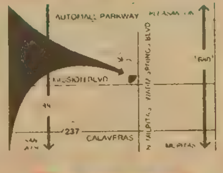
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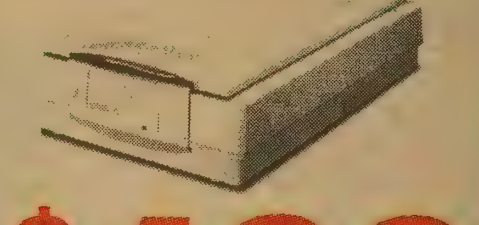

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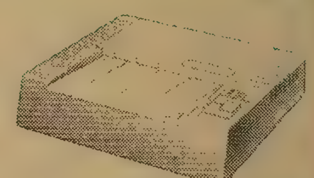

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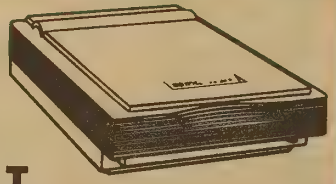

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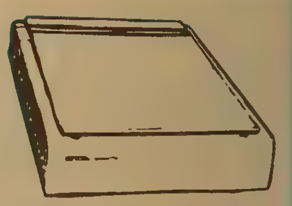

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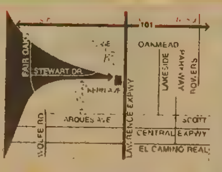
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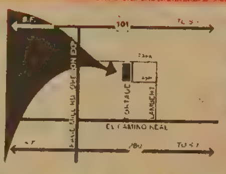
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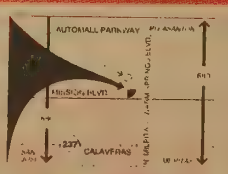
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3.5" IDE Hard Drive 1" Ht. • 13ms Average Access Time
SHD3211A
#1936247

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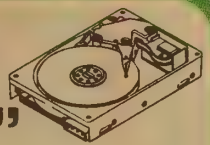

210MB 3.5" IDE HARD DRIVE

14ms Access • IDE Interface • 1" Ht. • 32K Buffer • Two Year Warranty CFS210A
#1888575

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250MB 3.5" IDE HARD DRIVE

3.5" Form Factor
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SHD3122A
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Maxtor

345MB IDE HARD DRIVE

1" HT. • 15ms Access Time
345MB Formatted Capacity • 7345A #1781762

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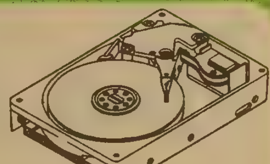

340MB IDE HARD DRIVE

1"HT • 12MS Access • 256K Cache • Bulk Pack
ST-3390A #1836246

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SAMSUNG

355MB IDE HARD DRIVE

355MB IDE HARD
DRIVE • 3.5" X 1" HT. 13 MSEC;
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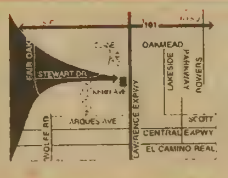
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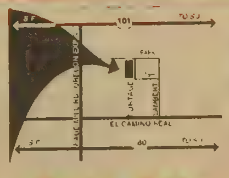
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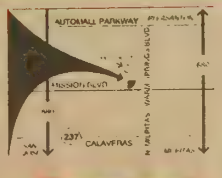
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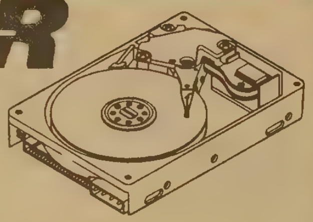

420MB
3.5" IDE
HARD DRIVE

14ms Fast Access • 3.5" X 1" • 32K Buffer
IDE Interface
#1886218

$197

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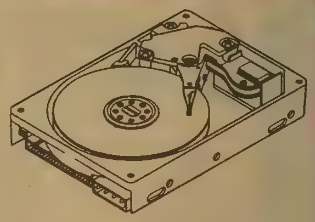

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3.5" IDE HARD DRIVE

3.5" x 1" ht.
#1920787

$195

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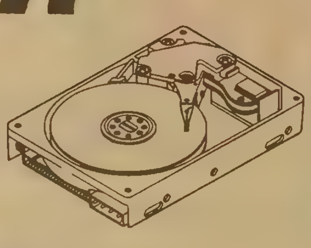

540MB
3.5" IDE
HARD DRIVE

3.5" X 1"HT. • 12msec Access
CFA540A
#1802210

$279

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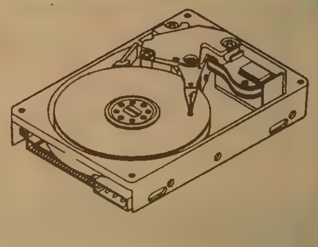

546MB
3.5" IDE
HARD DRIVE

3.5" X 1"HT. • 12msec Access • 256K Cache
7546A #1912395

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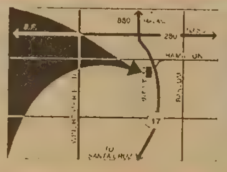

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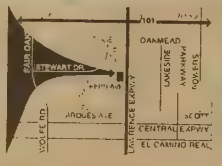
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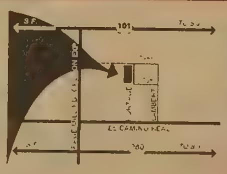
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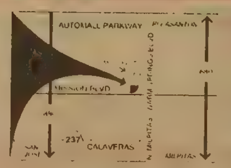
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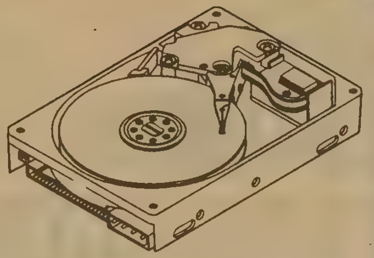

540MB 3.5" SCSI HARD DRIVE

3.5" X 1" HT • 8.5MS Access Time
540S #1802173

$399

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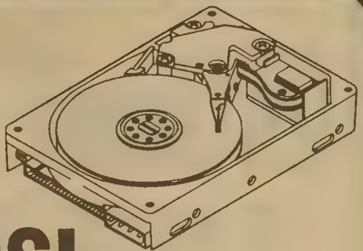

540MB SCSI HARD DRIVE

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#1899029

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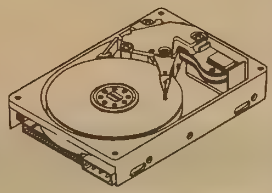

1 GIGABYTE SCSI - II HARD DRIVE

1" SIZE • 9MSEC FAST ACCESS • 256K CACHE
SMALLEST 1 GIGABYTE
#1844890

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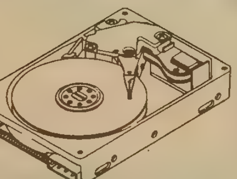

1.08 GIGABYTE SCSI HARD DRIVE

1.08 GB SCSI-3, 9MSEC, 1" HT, 5 Years Warranty
Model 1080S #1899052

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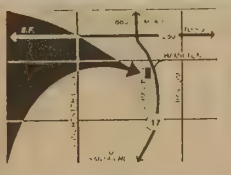
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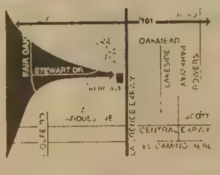
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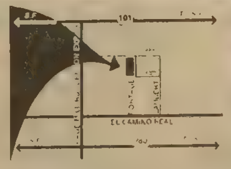
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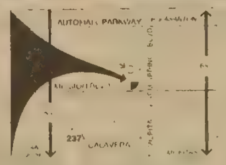
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DC 2120 Cartridge Included!

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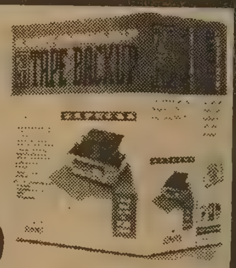
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250MB Internal Tape Backup
Runs off of Floppy Controller
Central Point Software For Windows
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TD630

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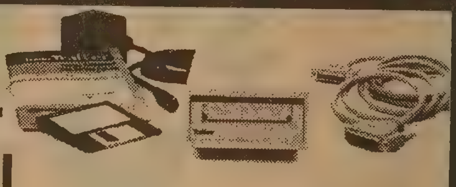

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Plug and Play. No hardware installation. Trakker connects to your computer's parallel printer port.
Full Compatibility. Works with any computer with an IBM® compatible parallel printer port.
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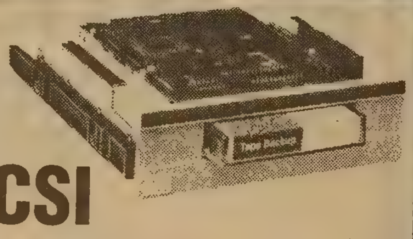
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12MB/MIN • NOVELL/LANTA
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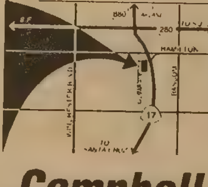
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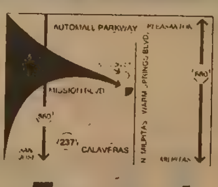
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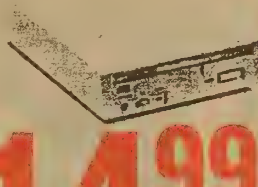

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• 300 KB/S Transfer Rate

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55JD
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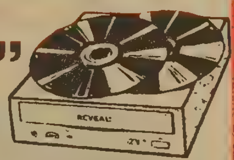

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Two Year Warranty

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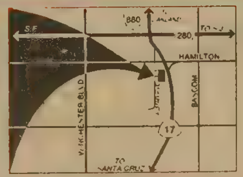
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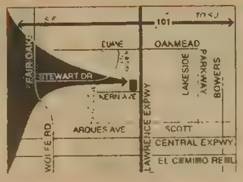
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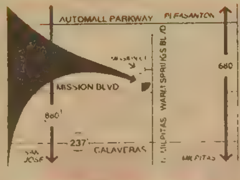
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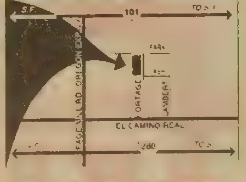
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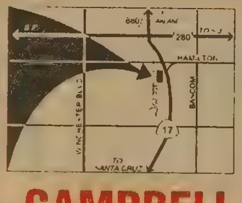

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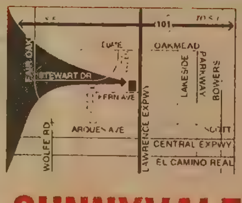

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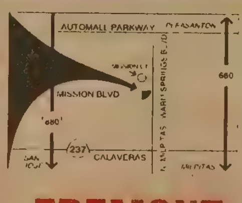

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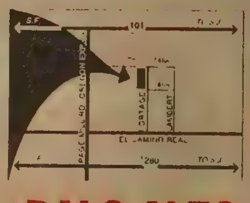

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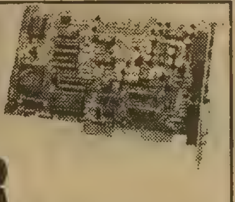

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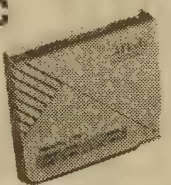

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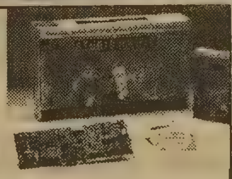

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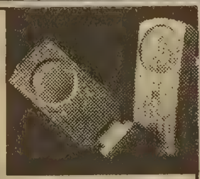

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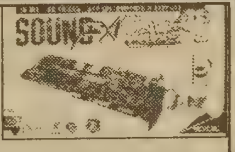

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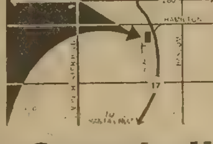

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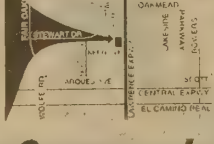

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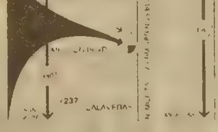

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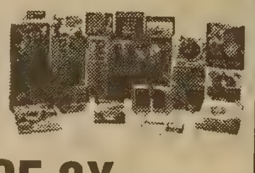

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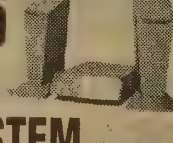

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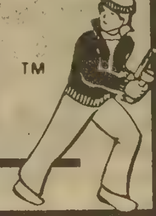

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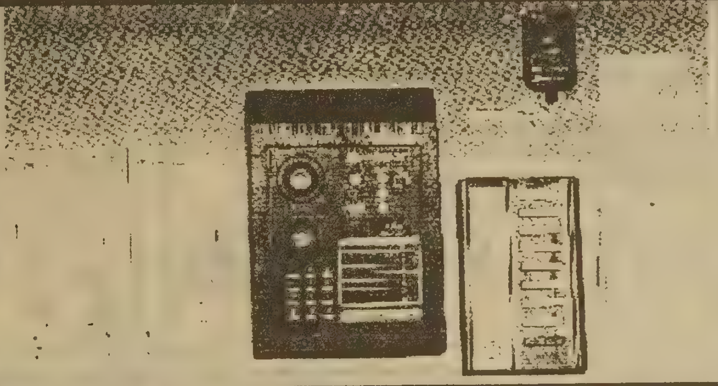

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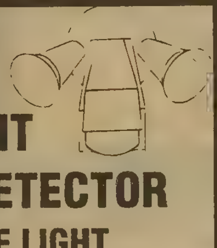

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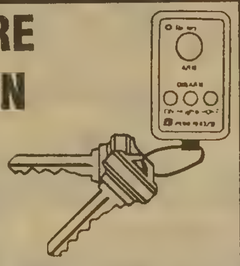

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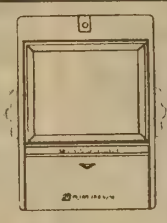

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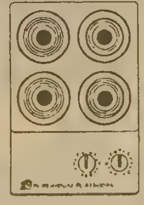

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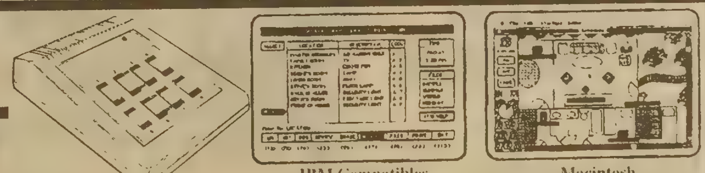

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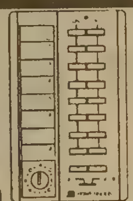

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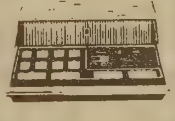

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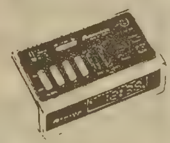

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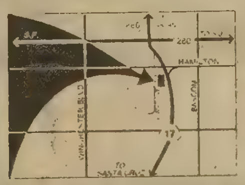

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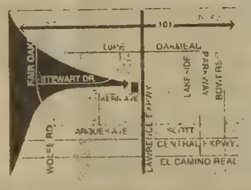

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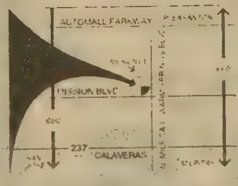

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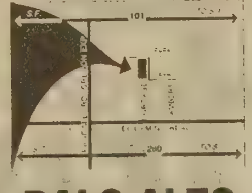

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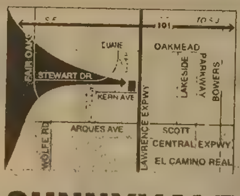

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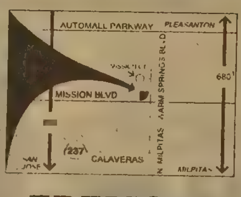

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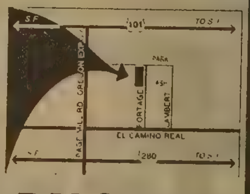

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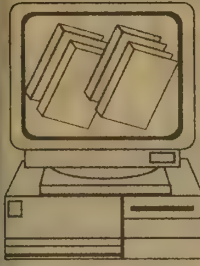

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A BEGINNER'S GUIDE

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Welcome to Internet, the global web of computer networks reaching millions of people all over the world. From the mundane to the technical, the numorous to the scientific, the Internet is an open door to the latest information on medicine, environmentalism, sports, politics, social issues, education and much more.

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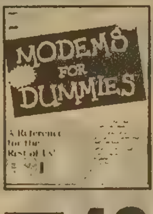
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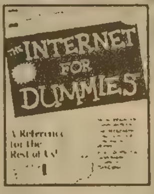
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The Internet is the fastest growing source of information and services for millions of computer users. For novice users unsure how to take advantage of the world's biggest computer network, The Internet For Dummies provides a vital reference that'll enable you to swap e-mail, conversation, software, and more across the globe!

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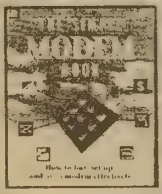

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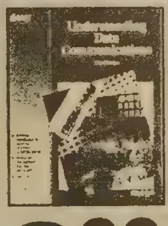

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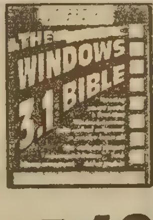
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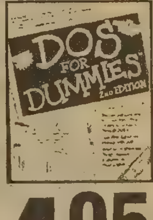
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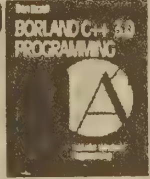
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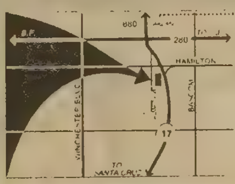
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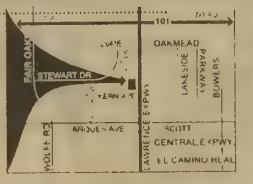
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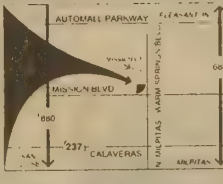
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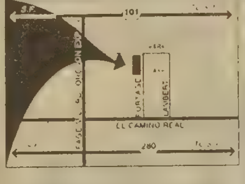
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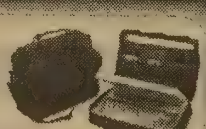

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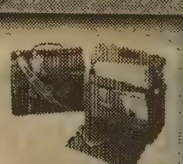

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Roomy interior padded compartment for laptop and other accessories. 3-divider document compartment. Front exterior compartment with portfolio for files, diskettes, business cards and airline tickets. Zippered external pocket holds airline tickets, passports, etc. Quick-release snaps for easy access to your laptop.
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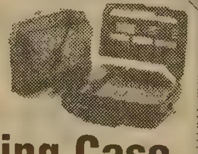

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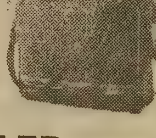

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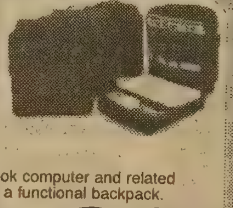

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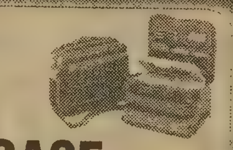

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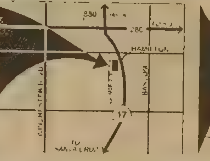

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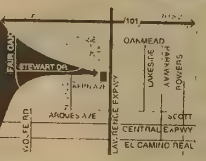

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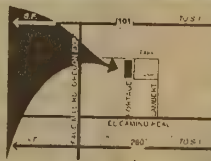

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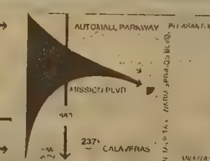

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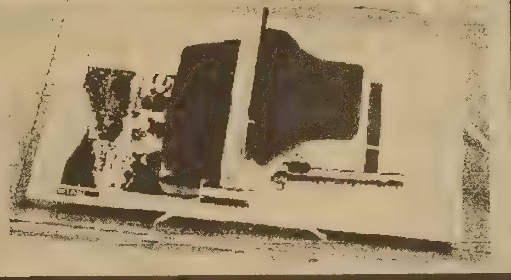

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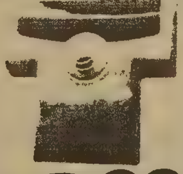

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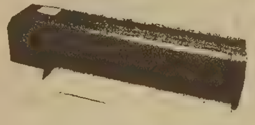

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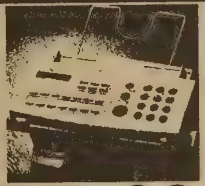

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Scanfx supports Twain and HP emulated driver. Scanfx lets you manage Faxing, Copying, Scanning, Retyping right on your own desktop by just a single key stroke.

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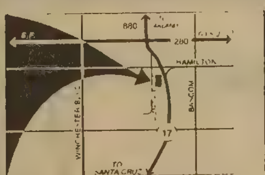
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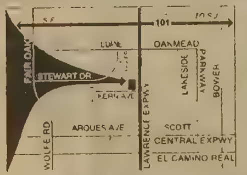
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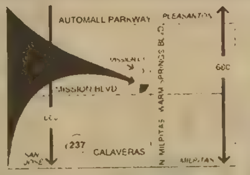
AUTOMALL PARKWAY
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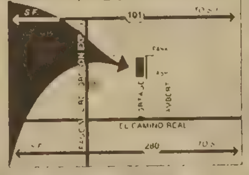
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THERMA PLUS PAPER

FAX MACHINE

ACS ANTI-CURL SYSTEM

WITH PAPER CUTTER

Brother's breakthrough fax machine incorporates newly developed therma plus technology which uses fax paper that feels like plain paper and reduces print fading (lasts 3 times longer than thermal paper under normal filing conditions, and you can even use a highlighter!). Other features include, 10 page document feeder, 15 station memory, 16 level grey scale, activity report, polling and much more for only...

$299

Model
FAX-620
#1896510

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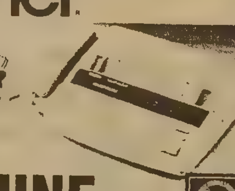

FAX MACHINE

ACS ANTI-CURL SYSTEM

WITH PAPER CUTTER & 32 LEVEL GRAYSCALE

From Brother the high tech home office leader come this feature laden fax machine with 32 level grayscale for enhanced contrast reproduction, 60 station memory, 10 page auto document feeder, anti-curl mechanism, smoothing, multiple resolution transmission, 16 digit LCD display, activity report, Polling, next fax reservation, and much more. Now just....

$329

Model
FAX-640
#1917437

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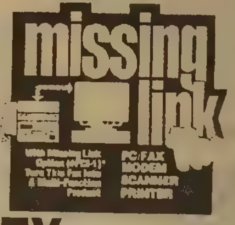
PLAIN PAPER LASER FAX AND COPY SYSTEM


missing link
PC/FAX
MODEM
SCANNER
PRINTER

WITH PC LINK CAPABILITY

Brothers state-of-the-art Laser fax machine combines laser print quality with copier capabilities of up to 99 continuous copies along with reduction and enlargement capabilities, and PC Link capability enabling you to utilize the laser fax machine as either a Scanner, PC/Fax Modem, or a printer! Other features include 256k memory for out of paper reception or sequential broadcasting, 30 page document feeder, 200 page sheet paper tray, 140 station memory, 32 level gray scale, and much much more! The best home office investment you will ever make at just...

$899

Model
PPF-2500
#1925173

We're at your side.

brother

FAX MACHINE

WITH 1MB MESSAGE CENTER & PC LINK CAPABLE

Brothers revolutionary fax machine offers a digital message center for either18 minutes of recording, up to 50 page of memory for out of paper reception, or you can configure the storage memory to be usedon a first come first serve basis. The optional missing link will allow this fax machine to act as a PC/fax modem, a scanner, and a printer! Other feature include anti-curl system, uses ThermaPlus paper,quick - scan, 164' paper roll capacity, 15 page document feeder, auto cutter, sequential broadcasting, and 60 number memory just to name a few. Now only...

$449

Model
FAX-820
#1925195

We're at your side.

brother

PLAIN PAPER FAX

WITH 256K MEMORY

Brother's done it again! Last year Brother broke the $400 price barrier in paper cutter Fax, and for an encore, Brother has destroyed the $799 stand alone plain paper Fax barrier with this unbelieveable value. Its 200 sheet paper cassette, 30 page auto document feeder, on-screen programming, "smoothing" enhanced image resolution, 48 digit LCD display, multiple resolution transmission, 32 level grayscale, 160 station memory, and Fax/Tel Switch makes this the best value you will find at only.....

$599

Model
FAX-980
#1801828

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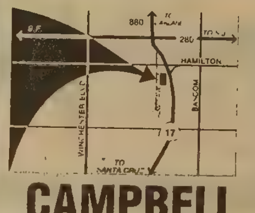
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TO S.J.
HAMILTON
WINCHESTER BLVD
BASCOM
17
TO SANTA CRUZ

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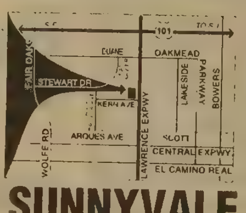
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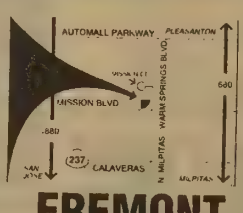
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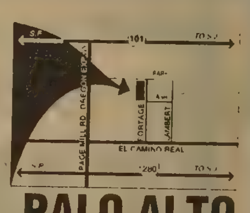
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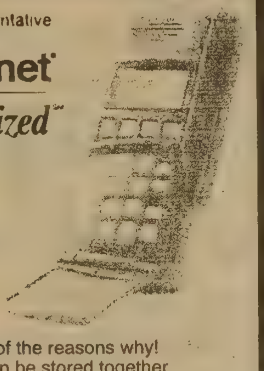

CELLULAR FLIP PHONE

WITH 100 NUMBER ALPHANUMERIC MEMORY

Everyone has flipped for flip phones, and this GE Pocketfone is one of the reasons why! With its 100 Number Alphanumeric Memory (names and numbers can be stored together and scanned alphabetically), Menu Scroll, Dual NAM, 8 Level Call Restrictions, Last Number Redial, Lighted Keypad, Auto Scratchpad, Mute, Low Battery Warning, Speed Dialing, Call Mailbox, 90 Minute Talk Time Battery, Overnight Charger, and much more! Refurbished to work like new at only...

$99.99*

SUPPLIES ARE LIMITED

Model CT-400R**
#1906411

*After $25 Instant Service Activation Rebate. Price Without Activation $124.99

MOTOROLA

Authorized Sales Representative

GTE Mobilnet

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ALPHA MICRO-TAC CELLULAR PHONE

If it's small and lightweight you're looking for, this is the cellular phone for you! With its 101 alphanumeric memory, a desktop charger, and standard battery, this technologicaly advanced cellular phone can be yours for only...

$299.95*

Model DPCAC Deluxe**
#1635988

*After $25 Instant Service Activation Rebate. Price Without Activation $324.95

MOTOROLA

Authorized Sales Representative

GTE Mobilnet

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CELLULAR FLIP PHONE

This premium value cellular phone from Motorola comes equipped with 30 number memory, LED display, call timer, signal strength meter, a battery with 75 minute total talk time, and an overnight charger for only...

$159.95*AB

A) *After $25 Instant Activation Rebate,
B) And with the purchase of Motorola Travel Pak #1854435 at $59.95. Total Cost without Activation $244.90.

Model DPC-550**
#1635999

MOTOROLA

Authorized Sales Representative

GTE Mobilnet

Get Mobilized™

MICRO TAC LITE CELLULAR PHONE

Weighing in at 7.7 ounces and measuring 11.6 cubic inches, this is one of the lightest and most advanced cellular telephones available. With 101 alpha numeric memory, retractable antenna, standard battery, and rapid charger, you can receive state of the art performance and design for only...

$439.95*

Model Micro Tac Lite**
#1705832

*After $25 Instant Service Activation Rebate. Price Without Activation $464.95

CELLULAR BATTERIES	BATTERY ELIMINATORS	LEATHER CASES
FOR MOTOROLA MICROTAC #1918391 STARTING AT **$39.99**	**FOR MOTOROLA MICROTAC** #1918313 STARTING AT **$19.99**	**FOR MOTOROLA MICROTAC** #1818482 *STARTING AT **$29.95**
FOR MOTOROLA 8000/9000 SERIES #1918416 STARTING AT **$39.99**	**FOR MOTOROLA 8000/9000 SERIES** #1918335 STARTING AT **$19.99**	**FOR MOTOROLA 8000/9000 SERIES** #1818471 STARTING AT **$29.95**
FOR General Electric CT 400R #1918438 STARTING AT **$39.99**	**FOR General Electric CT 400R** #1921722 STARTING AT **$19.99**	***THESE ARE JUST A FEW EXAMPLES OF THE CELLULAR SELECTION AND SAVINGS AT FRY'S***

MOTOROLA

MICRO TAC ULTRA LITE CELLULAR PHONE

WITH VIBRA CALL

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Motorola's lightweight champion of cellular phones tips the scales at only 5.9 ounces and contains a unique ring selector that includes a setting for vibrate, just like a pager! Other features include 101 alpha-numeric memory, memory scroll, recall, two batteries, rapid charger, carry case, and more for only ....

$599.95*

Model Micro Tac Ultra Lite**
#1794986

*After $25 Instant Service Activation Rebate. Price Without Activation $624.95

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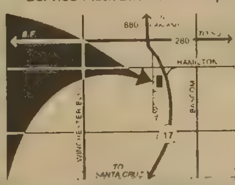

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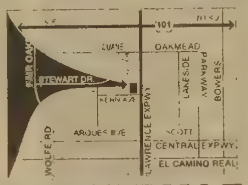

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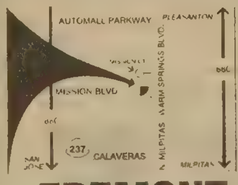

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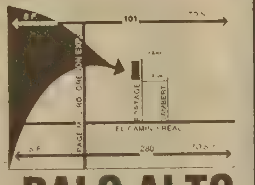

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YOUR BEST PANASONIC HOME OFFICE BUYS ARE ALWAYS AT FRY'S!

ANSWERING MACHINES

Panasonic

ANSWERING MACHINE

Answering System with Auto-Logic Operation, Tone Remote Control, Digital Display, Message Memo Recording and remote turn on, Auto-Logic Operation automatically rewinds, plays messages, stops at the last message and resets itself at the touch of one button.

$39.99

MODEL KX-T1000
#1498194

Panasonic

DUAL MICRO CASSETTE ANSWERING SYSTEM

Panasonic's new dual micro cassette answering system offers an LCD Call Counter, marker message, room monitor, auto disconnect, electronic auto disconnect, electronic volume control, audible message alert, and much more for only…

$69.95

MODEL KX-T2100
#1740208

Panasonic

TWO LINE ANSWERING MACHINE

WITH VOICE TIME/DAY STAMP

Perfect for the home or office, this Panasonic two line answering machine offers voice time/day stamp, voice prompts, 2 variable greeting messages, room monitoring, message alert, call screening, auto interrupt, toll saver, and more. Now just…

$129.95

MODEL KX-T5300
#1768084

Panasonic

ALL DIGITAL ANSWERING MACHINE

WITH 30 MINUTE CAPACITY & VOICE TIME/DAY STAMP

This Panasonic all digital answering machine comes equipped with 30 minutes of total recording capacity and voice promps for time, AM/PM, voice remote menu, number of messages, pre-recorded greeting messages, and time/day stamp on each message. Other features include LCD readout, quick playback, message alert, room monitoring, 2-way and memo recording, and much more! Now just...

$159.95

MODEL
KX-T8100
#1914607

BUSINESS PHONES

Panasonic

SPEAKERPHONE

For the office or home, this phone has all the features you need. It has a speaker phone, 28 station automatic dialer, automatic redial and much more.

$49.95

MODEL KX-T2315
#1530100

Panasonic

TWO LINE SPEAKERPHONE

A perfect compliment to your home or office, this two-line speakerphone comes equipped with 3-way conferencing, 20 number programmability, seperate ring switches for each line, and a local mode function. Now only…

$69.99

MODEL KX-T3120
#1510676

Panasonic

TWO LINE SPEAKERPHONE

WITH LCD DISPLAY

From Panasonic comes this fully featured 2-line speakerphone with LCD display, 3-way conference call, volume control for speaker and handset, 24-station one-touch dialer, auto redial, flash, separate ringer tone, line status indicator, memo dial, and save redial, all for only…

$89.95

MODEL KX-T3175
#1745122

Panasonic

THREE LINE SPEAKERPHONE

WITH LCD DISPLAY

From Panasonic comes this fully featured 3-line speakerphone with LCD display, 3-way conference call, volume control for speaker and handset, 48-station one-touch dialer, auto redial, flash, separate ringer tone, line status indicator, memo dial, and save redial, all for only…

$169.95

MODEL KX-T3185
#1768039

10 CHANNEL CORDLESS PHONES

Panasonic

10 CHANNEL AUTOSCAN CORDLESS PHONE

Panasonic's newest cordless phone comes equipped with a retractable flexible rubber antenna, sound charger technology, which helps filter out background noise resulting in enhanced sound quality, and 1-way paging between the base and handset. An excellent value at only…

$79.95

MODEL KX-T3850
#1764839

Panasonic

10 CHANNEL CORDLESS PHONE

WITH QUICK CHARGE & SECURE GUARD SYSTEM

Panasonic has developed the latest in cordless technology by incorporating a Quick Charge system that will enable you to recharge its battery in one hour providing 7-day standby or 3 hours providing 21-day standby! The Secure guard system can help keep your conversations private and help prevent eavesdropping scanners or baby monitors. Other features include one paging, 10 number memory, last number redial, flash, auto security code settings and much more for only.

$118.95

MODEL
KX-T3940
#1820915

Panasonic

10 CHANNEL AUTOSCAN CORDLESS DUAL KEYPAD SPEAKERPHONE

WITH SECURE GUARD VOICE SCRAMBLING

Panasonic's comes equipped with secure guard which scrambles your voice when others try to listen in on your conversations with other cordless phones, radios or even scanners! Other features include quick charge technology enabling to fully charge the battery in only 3 hours for 21 day standby, 2-way paging, intercom, 10 number memory, high gain antenna, and much more. All for only…

$159.95

MODEL
KX-T3965
#1886160

Panasonic

2-LINE 10 CHANNEL CORDLESS PHONE

WITH SPEAKERPHONE

The KX-T3980 is one of the most versital phones Panasonic has ever developed! When you combine the convenience of a cordless phone with the flexibility of a 2-line capability along with speakerphone, 3-way conference, 2-way page, and auto intercom, it all adds up to a value-too good to pass up!

$179.95

MODEL
KX-T3980
#1671595

10 CHANNEL CORDLESS PHONES WITH ANSWERING MACHINE

Panasonic

10 CHANNEL CORDLESS SPEAKERPHONE

WITH ANSWERING MACHINE

This cordless answering system with sound charger technology delivers sound so clear, you will hardly believe your ears! Some of the features included are, 2- way paging, intercom, auto security system, message alert, 2-way and memo recording just to name a few. Now only…

$149.95

MODEL
KX-T4330
#1796483

Panasonic

10 CHANNEL CORDLESS SPEAKERPHONE

WITH ANSWERING MACHINE AND TIME/DAY STAMP

With speakerphone, time/day stamp, 2-way page, intercom, an auto security system, message alert, 2-way and memo recording, time check, 2 message greetings, and much more, this Panasonic cordless speakerphone with micro cassette answering machine is an excellent value at only.....

$189.95

MODEL
KX-T4370
#1796494

Panasonic

10 CHANNEL CORDLESS SPEAKERPHONE

WITH DUAL MICROCASSETTE

This top of the line cordless dual microcassette answering system with sound charger technology delivers sound so clear, you will hardly believe your ears! Some of the features included are: 2-way paging, intercom, auto security system, message alert, 2-way and memo recording just to name a few. Now only…

$199.95

MODEL
KX-T4400
#1735370

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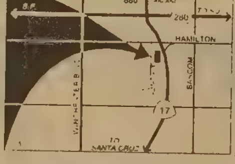

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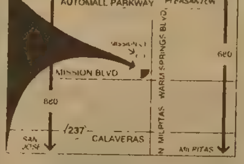

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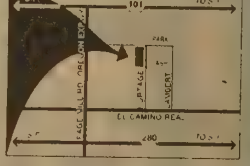

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SPEAKERPHONES

BELL Phones
BY NORTHWESTERN BELL PHONES
A U S WEST COMPANY

SPEAKERPHONE
WITH 13 NUMBER MEMORY

The convenience of a handsfree speakerphone allows you to do other tasks while carrying on a conversation on the phone. Features include 13 number memory, auto redial, mute, flash, and more. An excellent addition to any home or office at only...

$24.95

MODEL 4350
#1917518

BELL Phones
BY NORTHWESTERN BELL PHONES
A U S WEST COMPANY

SPEAKERPHONE
WITH LCD DISPLAY

This Northwestern Bell speakerphone comes loaded with features like an LCD which displays time & date, alarm & timer, and number called display, on-hook dialing, 30 number memory, busy redial, flash, pause, speaker volume control, and much more for only...

$39.95

MODEL 2500S
#1810185

AT&T

SPEAKERPHONE

With features like hands-free speakerphone, 32 number memory, hold, receiver and speakerphone volume control, last number redial, flash, ringer control, programmable pause, mute, just to name a few, this AT&T speakerphone will be an excellent addition to any home or office at only.....

$49.95

MODEL 725
#1671621

Panasonic

LCD READOUT SPEAKERPHONE

This outstanding value from Panasonic offers a 12-digit LCD readout for phone number, clock, call timer(minutes and seconds), and operating modes. Perfect for the home or office at only...

$69.95

MODEL KX-T2365
#163665

MULTI-LINE PHONES

BELL Phones
BY NORTHWESTERN BELL PHONES
A U S WEST COMPANY

TWO LINE PHONE

Perfect for the home office with multi-line needs, this 2-line phone from Northwestern Bell features line-in-use LEDs, 3-way conferencing, 15 number memory, hold, flash, pause, and ringer controls. An excellent value at...

$39.99

MODEL
Easytouch 2202
#1890905

Panasonic

TWO LINE PHONE

A two line phone doesn't have to cost a fortune. Panasonic has the low cost answer for you. This unit has a convenient auto dialer, conference calling and much more!

$69.95

MODEL KX-T3110
#1505313

GENERAL ELECTRIC
GE: We bring good things to life

FOUR LINE SPEAKERPHONE

This deluxe four-line speakerphone is capable of handling up to four lines with a maximum of 16 stations. Its convenient 32 number one-touch telephone memory, along with all station page, intercom, call transfer, busy redial, flash and much more make this the perfect addition to any home or office at just......

$149.95

MODEL 2-9450
#1768637

AT&T

3-LINE SPEAKERPHONE

AT&T's multi-functional centrex compatible 3-line speakerphone comes equipped with page, intercom, 3-way conference, LCD display, 40 number memory, auto line selection, hold, do not disturb function, auto-redial, mute, programmable pause, call transfer, flash, seperate ringer controls, and more, all for only...

$179.95

MODEL 843
#1853892

ALL DIGITAL ANSWERING MACHINES

AT&T

ALL DIGITAL ANSWERING MACHINE

This AT&T answering system utilizes tapeless digital technology to ensure consistent recording quality over the life of the system. The convenience of new message playback, outgoing message bypass, remote system turn on or off and remote message recording makes this an excellent value at only...

$69.95

MODEL 1710
#1853906

GENERAL ELECTRIC
GE: We bring good things to life

ALL DIGITAL ANSWERING MACHINE
WITH THREE MAIL BOXES

With three mailboxes to choose from, members of the household can have messages stored for them in their own mailbox! The all digital capability eliminates the need for moving parts and allows for instant playback of incoming messages-no need to wait for a tape to rewind or fast forward! Other features include voice time/day stamp, two outgoing messages, digital counter, selective message erase and much more for only...

$89.95

MODEL 2-9876
#1839261

SONY.

ALL DIGITAL ANSWERING MACHINE
W/ VARIABLE SPEED MESSAGE PLAYBACK

Sony has taken digital technology to a new dimension with this beautifully-designed, all digital answering system. The variable-speed message playback controller allows you to speed up (to 1.6 times speed) or slow down (to 0.7 speed) playback of messages without changing pitch. In addition, you can skip, repeat or backspace messages. The multi-function LCD display functions as a digital message counter, clock, call timer, answer mode indicator, and back-up battery strength indicator, while the voice time/day stamp automatically records the time of the message receipt after each message. Other features include: Voice-guided operation, Pre-recorded greeting, Announce-only mode, Memory usage guage, Audible message alert, Remote on/off, Auto interrupt, Memo recording, 2-way conversation recording, and Adjustable ring delay. An invaluable addition to any home or office at only...

$129.95

MODEL
TAM-1000
#1803901

Panasonic

ALL DIGITAL 4 MAILBOX ANSWERING SYSTEM
W/SPEAKERPHONE & VOICE TIME/DAY STAMP

Panasonic's fully featured answering system comes equipped with 30 minute storage capacity, voice time/day stamp, speakerphone, voice menu, 4 personal mailboxes with security, lcd display, message scan, programmable alarm, message transfer, 2-way record, selective message delete, message skip/repeat, auto disconnect, auto redial, 10 number memory, and much more! An invaluable addition to any home or office at just...

$199.95

MODELKX-T2880
#1841989

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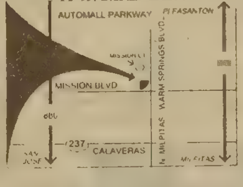

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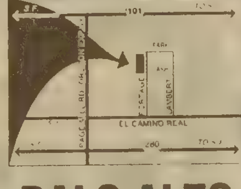

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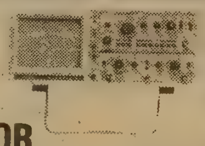

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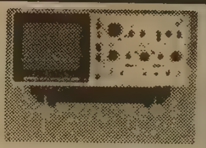

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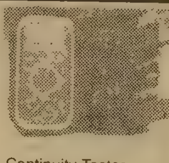

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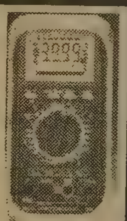

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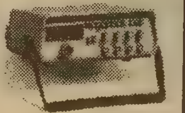

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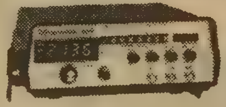

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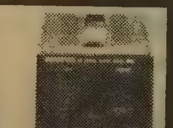

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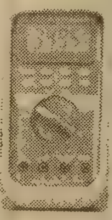

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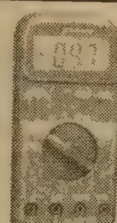

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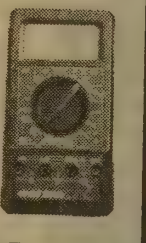

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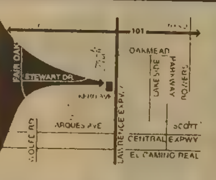

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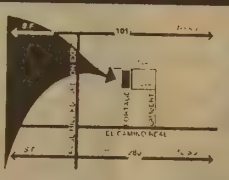

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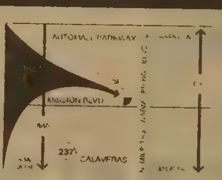

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Internet...*continued from page 78*

all readers of the *New York Times* would also have to be included. With edges so vague, what would be the point in calling anything the Internet? We choose to stick with a definition of the Internet as requiring interactive services.

Some people object to excluding the asynchronous networks from a definition of the Internet just because they don't support the interactive services. The argument they make is that FTP, Gopher, and WWW can be accessed through mail. This is true, but it's hardly the same, and hardly interactive in the same sense as using FTP, Gopher, or WWW over an IP connection. It's rather like saying a mail-order catalog is the same as going to the store and buying an item on the spot. Besides, we've yet to see anyone log in remotely by mail.

The Matrix

So what to call systems that can exchange mail, but aren't on the Internet? We say they are part of the Matrix, which is all computer systems worldwide that can exchange electronic mail. This term is borrowed (with permission) from Bill Gibson, the science fiction writer.

Other people refer to the Matrix as global email. That's accurate, but is a description rather than a name. Some even call it the email Internet. We find that term misleading, since if a system can only exchange mail, we don't consider it part of the Internet. Not to mention not everything in the world defines itself in terms of the Internet, or communicates through the Internet. FidoNet and WWIVnet, for example, have gateways between themselves that have nothing to do with the Internet. Referring to the Matrix as the Internet is rather like referring to the United Kingdom as England. You may call it convenient shorthand; the Scots may disagree.

USENET And News

What about news? Well, the set of all systems that exchange news already has a name: USENET. USENET is presumably a subset of the Matrix, since it's hard to imagine a USENET node without mail, even though USENET itself is news, not mail. USENET is clearly not the same thing as the Internet, since many (almost certainly most) Internet nodes do not carry USENET news, and many USENET nodes are on other networks, especially UUCP, FidoNet, and BITNET.

A few years ago it was popular in some corners of the press to attempt to equate USENET and the Internet. They're clearly not the same. News, like mail, is an asynchronous, batch, store-and-forward service. The distinguishing services of the Internet are interactive, not news.

Is IP Characteristic Of The Internet?

We further choose to define the Internet as being those networks that use IP to permit users to use both the communication services and at least TELNET and FTP among the interactive services we have listed.

This requirement for IP has been questioned by some on the basis that there are now application gateways for other protocol suites, such as Novell Netware, that permit use of such services. This kind of application gateway is actually nothing new, and is not yet widespread. We choose to think of such networks, at least for the moment, as yet another layer of the onion, outside the core and consumer layers of the Internet.

Others have objected to the use of IP as a defining characteristic of the Internet because they think it's too technical. Actually, we find far fewer people confused about whether a software package or network supports IP than about whether it's part of the Internet or not.

Some people point out that services like WWW, Gopher, FTP, TELNET, etc. could easily be implemented on top of other protocol suites. This is true, and has been done. However, people seem to forget to ask why these services developed on top of IP in the first place. There seems to be something about IP and the Internet that is especially conducive to the development of new protocols. We make no apologies about naming IP, because we think it is important.

There is also the question of IP to where? If you have a UNIX shell login account on a computer run by an Internet access provider, and that system has IP access to the rest of the Internet, then you are an Internet user. However, you will not be able to use the full graphical capabilities of protocols such as WWW, because the provider's system cannot display on a bitmapped screen for you. For that, you need IP to your own computer with a bitmapped screen.

These are two different degrees of Internet connectivity that are important to both end-users and marketers. Some people refer to them as text-only interactive access and graphical interactive access. Some people have gone so far as to say you have to have graphical capabilities to have a full-service Internet connection. That may or may not be so, but in the interests of keeping the major categories to a minimum, we are simply going to note these degrees and say no more about them in this article. However, we agree that the distinction of graphical access is becoming more important with the spread of WWW and Mosaic.

Conferencing Systems And Commercial Mail Systems

Conferencing systems such as Prodigy and CompuServe support mail and often something like news, plus database and services. But most of them do not support the characteristic interactive services that we have listed. The few that do (Delphi and AOL), we simply count as part of the Internet. The others we count as part of the Matrix, since they all exchange mail.

We find that users of conferencing systems have no particular difficulty in distinguishing between the conferencing system they use and the Internet. CompuServe users, for example, refer to "Internet mail," which is correct, since the only off-system mail CompuServe supports is to the Internet, but they do not in general refer to CompuServe as part of the Internet.

Similarly, users of the various commercial electronic mail networks, such as MCI Mail and SprintMail, seem to have no difficulty in distinguishing between the mail network they use and the Internet. Since they all seem to have their own addressing syntax, this is hardly surprising. We count these commercial mail networks as part of the Matrix, but not part of the Internet. Many of them have IP links to the Internet, but they don't let their users use them, instead limiting the services they carry to just mail.

Russian Dolls

So let's think of a series of nested Chinese boxes or Russian dolls, the kind where inside Boris Yeltsin is Mikhail Gorbachev, inside Gorbachev is Brezhnev, then Khrushchev, Stalin, Lenin, and maybe even Tsar Nicholas II. But let's only talk about three concentric layers: the Matrix on the outside, the consumer Internet inside, and the core Internet inside that.

	the core Internet	**the consumer Internet**	**the Matrix**
interactive services	**supplier-capable**	**consumer-capable**	**by mail**
	stores and shoppers	**shoppers**	**mail order**
asynchronous services	**yes**	**yes**	**yes**

Some people have argued that these categories are not sequential. They look sequential to us, since if you start with the core Internet and move out, you subtract services, and if you start at the outside of the Matrix and move in, you add services.

Some people have argued that these categories are bad because they are not mutually exclusive. Well, we observe that in real life networks have differing degrees of services, and the ones of most interest share the least common denominator of electronic mail. Thus concentric categories are needed to describe the real world. You can, however, extract three mutually exclusive categories by referring to the core Internet, to the consumer-only part of the Internet, and to asynchronous systems.

Outside The Matrix

In addition to computers and networks that fit these classifications, there are also LANs, mainframes, and BBSes that don't exchange any services with other networks or computers; not even mail. These

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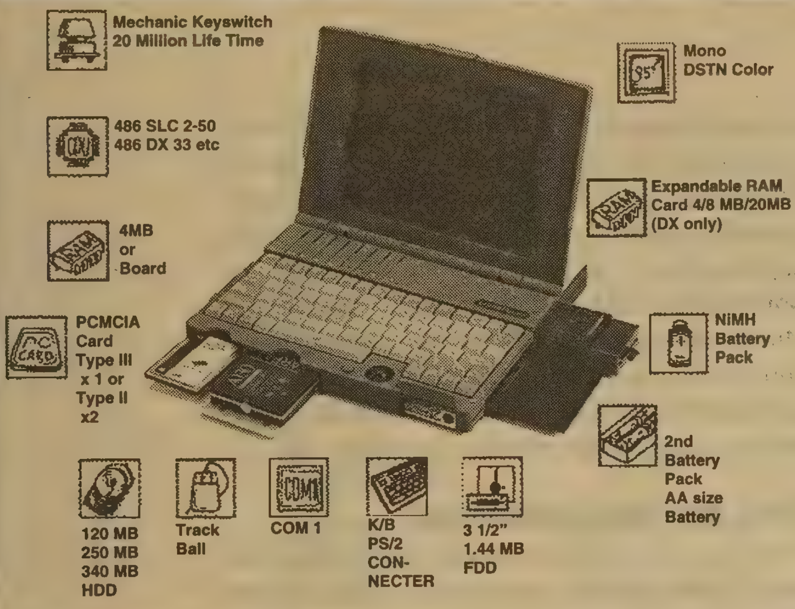
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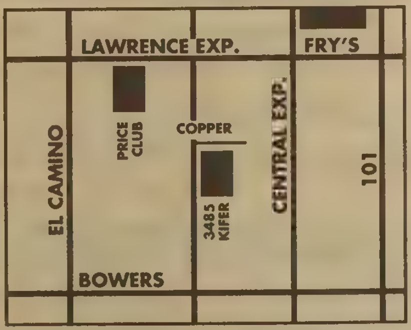
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systems are outside the Matrix. For example, many companies have an AppleTalk LAN in marketing, a Novell NetWare LAN in management, and a mainframe in accounting that aren't connected to talk to anything else. In addition, there are a few large networks such as France's Teletel (commonly known as Minitel) that support very large user populations but don't communicate with anything else. These are all currently outside all our Chinese boxes of the core Internet, the consumer Internet, and the Matrix.

DNS And Mail Addresses

There are other interesting network services that make a difference to end-users. For example, DNS (Domain Name System) domain names such as tic.com and domain addresses such tic@tic.com can be set up for systems outside the Internet. We used tic.com when we only had a UUCP connection, and few of our correspondents noticed any difference when we added an IP connection (except our mail was faster). This would be more or less a box enclosing the consumer Internet and within the Matrix. But the other three boxes are arguably the most important.

Some people have claimed that anything that uses DNS addresses is part of the Internet. We note that DNS addresses can be used with the UUCP network, which supports no interactive services, and we reject such an equation.

It is interesting to note that over the years various attempts have been made to equate the Internet with something else. Until the mid-1980s lots of people tried to say the Internet was the ARPANET. In the late 1980s many tried to say the Internet was NSFNET. In the early 1990s many tried to say the Internet was USENET. Now many are trying to say the Internet is anything that can exchange mail. We say the Internet is the Internet, not the same as anything else.

Summary

So, here we have a simple set of categories for several of the types of network access people talk about most these days. Any such categories are at least somewhat a matter of opinion, and other people will propose other categories and other names. We like these because they fit our experience of what real users actually perceive.

We invite our readers to tell us what distinctions they find important about the various networks and their services.■

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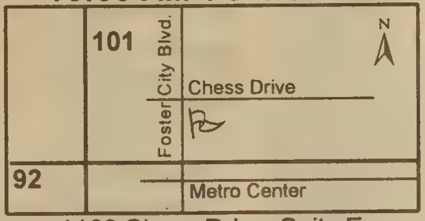

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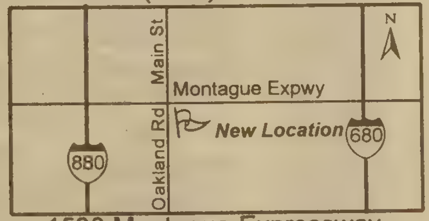

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Continued from page 148

24-bit. Comprehensive playback control is featured, with a real-time playback speed indicator. Sound (128K per sample maximum) and informational text can be added to animations too. (Two warnings: Set the stack for the animation player utility to 20,000 and don't do anything while a sample is playing, otherwise a system crash may result.)

Although you might be able to do most of this with ARexx scripts or using an ADPro front end, Anim Workshop 2 provides made-to-order automation and control, plus some added bells and whistles. If you work with Amiga animation, this is a product you should check out. (Axiom, 1668 E. Cliff Rd., Burnsville, MN 55337-1300. 612/894-0596)

Brilliance v2

Published By: Digital Creations
List Price: $99 (Upgrade $49)
Reviewed By: Douglas J. Nakakihara

Last year Digital Creations introduced Brilliance, a killer paint program designed to defeat the perennial champ, Electronic Arts' DeluxePaint. However, despite all of Brilliance's capabilities and features, its hardware dongle stuck in the throats of many Amiga users—as well as their joystick port—severely limiting overall acceptance. Well, Digital Creations has seen the light and removed the need for a dongle. Not only that, it's slashed the price from $249 all the way down to $99!

Brilliance is really two separate programs, one for Register-based screen modes and another for HAM modes. The Register version can now load HAM and 24-bit images and automatically convert them to the proper display mode. The new Rub Thru mode lets you reveal the spare screen by painting on the main screen. With HAM images, Magnify now features an option that minimizes HAM fringing. The Tweening requester (Move in DPaint) includes the ability to load and save settings. Also, an array of keyboard equivalents has been added to increase your productivity. A nice feature that allows quick review of animation frames has been added, and they've made it easier to use Brilliance as a straight animation player. The entire program has been refined while keeping its speed.

Overall, not many features have been added, as indicated by the small manual addendum. However, the copy protection removal is worth the cost of the upgrade. (Digital Creations, P.O. Box 97, Folsom, CA 95763-0097. 916/344-4825)

DesktopMAGIC

Published By: Mediadesk
List Price: $39.95
Reviewed By: Douglas J. Nakakihara

Mediadesk is shipping the kitchen sink of all screensavers, DesktopMAGIC. It features about thirty different screensaver effects, all with audio. Some of them will be familiar since they were patterned after well-known public domain (PD) efforts. Many of them also work on graphics cards, as long as they offer Workbench emulation. Everything is configurable, including volume, task priority, and a feature that substitutes a blank screen for the screensaver when CPU resources are below a user-defined minimum. Even a mouse accelerator is thrown in!

There are provisions for using your own animation or picture as a screensaver, as well as password protection. Music is not in Tracker-style mod format, but this deficiency is being addressed. However, IFF samples are supported.

DesktopMAGIC also features the ability to trigger audio clips when a certain event occurs. These are divided into five categories: events, keys, program, text, and time. Events include system requesters and windows, disk insertion/removal, mouse clicks, etc. Audio samples can also be triggered based on input from the keyboard, the display of user-specified text strings, running of programs, and certain time intervals. The default settings make your Amiga sound like a typewriter/cuckoo clock.

The 44-page manual includes detailed information on every effect, including CPU usage and which displays the effect is compatible with.

Basically, there is nothing here that has not been done before. However, nothing has even come close to integrating all of these features into a single package. Get this to put the fun back into your Amiga! (Mediadesk, 1875 S. Bascom Ave., Bldg. 116, Suite 204, Campbell, CA 95008-2359. 510/548-7117, 1-800-30-MDESK)

WaveMaker

Published By: Axiom Software, Inc.
List Price: $249.95
Reviewed By: Douglas J. Nakakihara

WaveMaker is a logo animation scene generator for LightWave 3D. Adjustable parameters are: the logo object, motion, durations, background, and elements. A logo object can be any LightWave object, which

Continued on page 318

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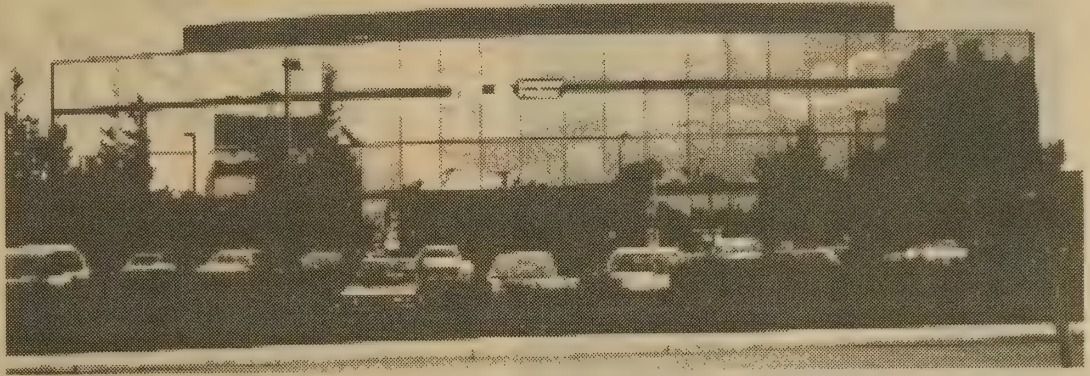

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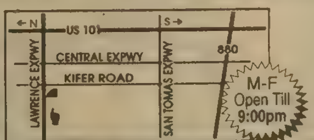

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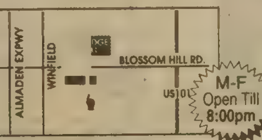

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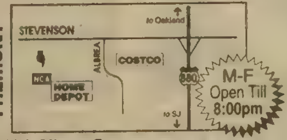

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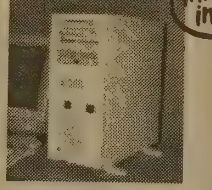

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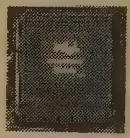

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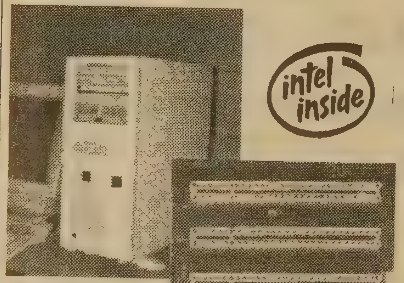

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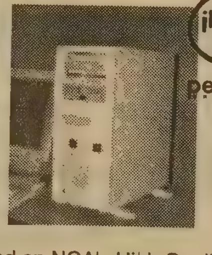

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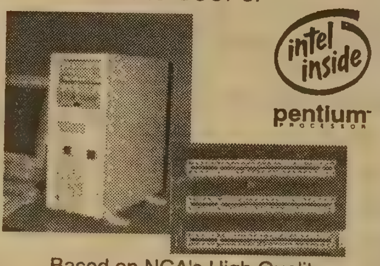

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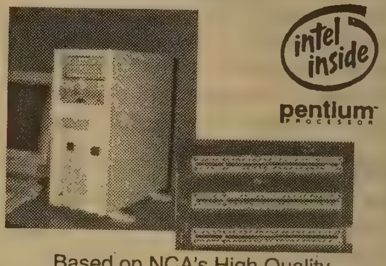

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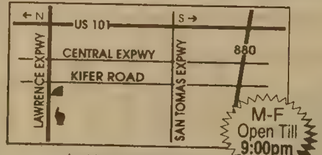

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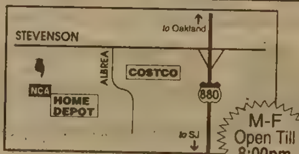

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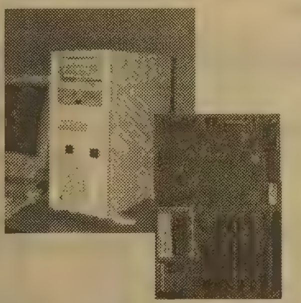

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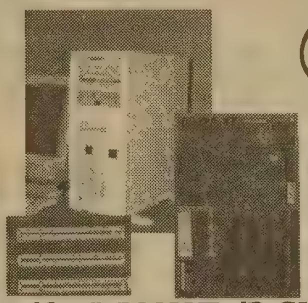

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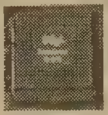

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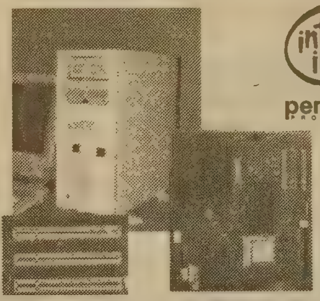

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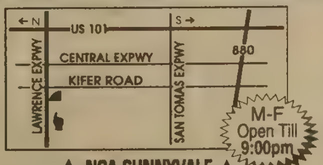

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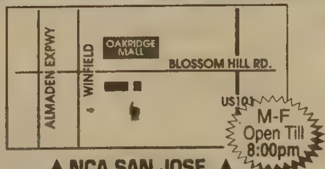

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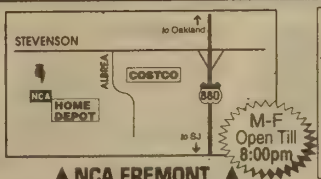

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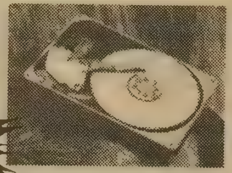

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546MB IDE 3.5"X1"

7546A
12ms
256K Cache
2 Yr. Warr.

$249

IDE

170MBIDE..............$149
7171A, 14ms, 1Yr. Warr.

290MBIDE..............$179
7290A, 14ms, 1 Yr. Warr.

345MBIDE......$199
7345A, 14ms, 2 Yr. Warr.

405MBIDE..........$219
7405A, 14ms, 2 Yr. Warr.

SCSI

External SCSI Drives Add $110

290MBSCSI..................$229
7290S, 14ms, 2 Year Warranty External $339

345MBSCSI..................$249
7345S, 14ms, 64K Cache, 2 Yr. Warr. External $359

540MBSCSI......$349
MXT-540S, 8.5ms, 256K Cache, 2 Year Warr. External $459
WHILE SUPPLIES LAST!

WESTERN DIGITAL

Caviar

Lowest* Price Guaranteed

340MB IDE $199
12MS. MODEL#WD2340, 3Yr. Warr.

420MB IDE $219
13MS. MODEL#WD2420, 3Yr. Warr.

540MB IDE $269
12MS. MODEL#WD2540, 3Yr. Warr.

700MB IDE $398
10MS. MODEL#WD2700, 3Yr. Warr.

1.0GB IDE $559
10MS. MODEL#WD31000A, 3Yr. Warr.

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Digital Equipment Corporation
High End, High Capacity

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1.6GB SCSI-II

While Supplies Last.

- DSP3160S
- 5400RPM
- 9.5ms
- 3.5" Drive

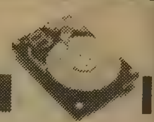
$899

External 1.6GB $999

Fast SCSI-II

CAPACITY	M/N	SIZE	RPM	SPEED	INTERNAL	EXTERNAL
1.0GB	3107L	3.5"X1"	5400	9ms	$699	$799
2.1GB	3210S	3.5"	5400	9.5ms	$1279	$1379
3.5GB	5350S	FH	5400	11.5ms	$1999	$2199

CONNER®



IDE

210MB IDE...........$165
14ms, CFA210

420MB IDE...........$199
14ms, CFS420A LOW PROFILE 3.5" X1"

540MB IDE...........$269
<12ms, CFA540A LOW PROFILE 3.5" X1"

810MB IDE...........$429
<12ms, CFA810A LOW PROFILE 3.5" X1"

1.08GB IDE...........$559
<9.5 ms, CFA1080A

SCSI

	INTERNAL	EXTERNAL
340MB SCSI CP30340S, 256K,3.5"X1"	$229	$329
540MB SCSI CP30540S, 3.5"X1", 256K	$329	$429
1.0GB SCSI CFP1060S, 256K, <10MS, 3.5"X1"	$594	$699

IBM®

1.0GB FAST SCSI-II
LOW PROFILE 3.5"X1"

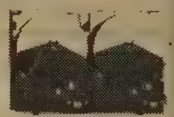
- 750,000 Hrs. MTBF
- 8.6ms Access Time
- 5400 RPM
- 512K Cache
- 5Yr. Warr.

INTERNAL **$639**
External $749

2.0GB FAST SCSI-II, 3.5", 8.6MS.......$1199

4GB Fast SCSI-II

5.25" FORMAT: CONTAINS TWO 3.5" HDAS
ADDRESSABLE AS ONE LUN



- Data Stripping Across Two Actuators
- 1MB Multi-Segmented, Dual Port Data Buffer
- <10ms Read Access Time
- 5400RPM
- Up to 10MB/Sec Transfer Rate (sync)
- 375,000 hous MTBF
- 5Yr. Warr. **External $2799**

$2498

527MB IDE.................$279
12ms, IBM527AT

728MB IDE.................$389
12ms, IBM728AT

QUALITY EXTERNAL FAST-WIDE SCSI CASE

For SUN, NeXT, and IBM Compatibles

- High Quality Case
- 2 Fast-Wide SCSI Outputs
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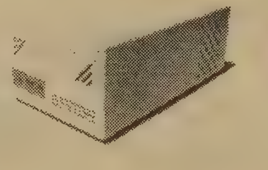

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See page 7 for more details on External Hard Drives, CD-ROM Drives, Tape Backup Drive...

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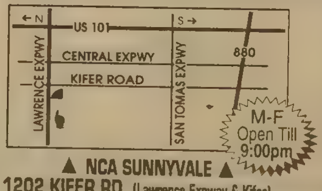

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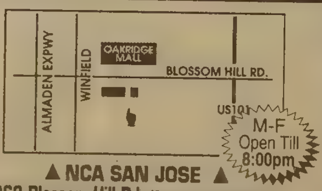

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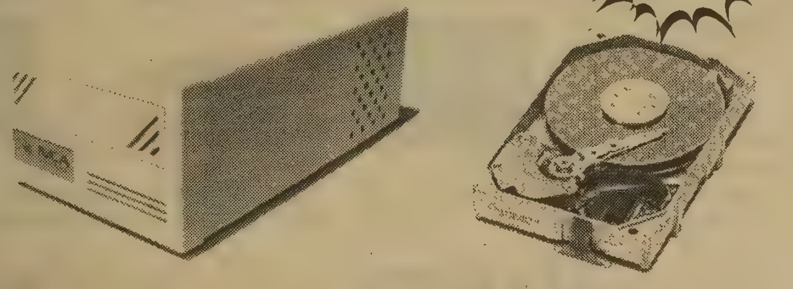

365MB IDE 3.5"X1"

QM30365A, 12ms, 64K CACHE 3.5"X1"

NEW

$199

BRAND NEW WITH A TWO YEAR FACTORY WARRANTY • FIVE YEARS ON PD SERIES ONE YEAR ON 2.5" DRIVES

IDE

FOR NOTEBOOKS

CAPACITY	M/N		SPEED	SIZE	PRICE
127MB	GLS127AT		17ms	2.5"X17mm	$249
170MB	GLS170AT		17ms	2.5"X17mm	$279
256MB	GLS256AT		17ms	2.5"X19mm	$339
170MB	ELS170A	32K	17ms	3.5X1"	178
210MB	LPS210A	32K	17ms	3.5"X1"	$179
270MB	**LPS270A**	**128K**	**12ms**	**3.5X1"**	**$229**
365MB	**QM30365A**	**64K**	**12ms**	**3.5X1"**	**$199**
540MB	**LPS540AT**	**128K**	**12ms**	**3.5X1"**	**$314**

SCSI

FOR MAC POWERBOOKS

CAPACITY	M/N	SPEED	SIZE	PRICE
160MB	GRS160S	17ms	2.5" X17mm	$259

CAPACITY	M/N	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
170MB	ELS170S	32K	17ms	3.5X1"	$189	$299
540MB	LPS540S	128K	12ms	3.5"X1"	$319	$429
540MB	EMPIRE	512K	9.5MS	3.5"X1"	$499	$629
1.0GB	PD1080S	512K	9.5ms	3.5"X1"	$629	$739
1.4GB	1400S	512K	8.9ms	3.5"X1"	$839	$949
2.1GB	**EMPIRE**	**512K**	**8.9ms**	**3.5"**	**$1149**	**$1249**

▶ FACTORY NEW WITH FULL FACTORY WARRANTY

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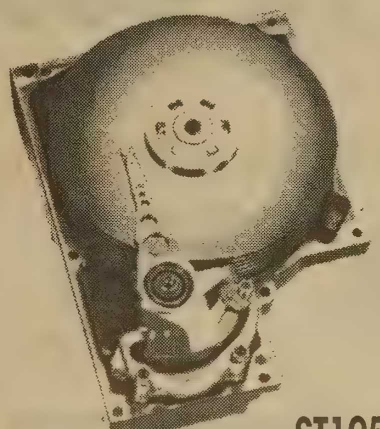
BARRACUDA SERIES



BARRACUDA II / 2.1GB

ST12550N
- ▶ 3.5", 8ms
- ▶ 7200RPM
- ▶ Fast SCSI-II
- ▶ 500,000MTBF

INTERNAL $1279

EXTERNAL $1389

BARRACUDA IV / 4.1GB

ST15150N
- ▶ 3.5", 8ms
- ▶ 7200RPM
- ▶ Fast SCSI-II
- ▶ 500,000MTBF

INTERNAL $2399

EXTERNAL $2499

ST12550W Fast Wide SCSI-II....$1499

IDE

CAPACITY	M/N	CACHE	SPEED	SIZE	PRICE
210MB	ST3243A	---	16ms	3.5"x1"	$189
341MB	ST3391A	120K	13ms	3.5X1"	$249
545MB	ST3655A	256K	12ms	3.5X1"	$399
130MB	*ST9145AG*	*64K*	*16ms*	*2.5" NOTEBOOK*	*$259*
209MB	*ST9235AG*	*64K*	*16ms*	*2.5" NOTEBOOK*	*$339*
340MB	*ST9385AG*	*64K*	*16ms*	*2.5" NOTEBOOK*	*$469*

SCSI

CAPACITY	M/N	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
456MB	ST3550N	256K	12ms	3.5X1"	$339	$449
1.0GB	**ST31200N**	**256K**	**9ms**	**3.5"x1"**	**$679**	**$779**
1.6GB	ST11950N	1024K	8ms	3.5"	$1249	$1359
2.1GB	ST12400N	256K	9ms	3.5"	$1199	$1299
2.1GB	ST12550N	1024K	8ms	3.5"	$1279	$1389
2.9GB	ST43400N	512K	10ms	FH	$1959	$2169
2.9GB	ST43401N	512K	10ms	5.25	$2099	$2299
4.1GB	ST15150N	7200RPM	8ms	3.5"	$2399	$2499
4.3GB	ST15230N	7200RPM	8ms	3.5	$2049	$2159
9.0GB	ST410800N	1024K	11.5ms	5.25	$3749	$3949

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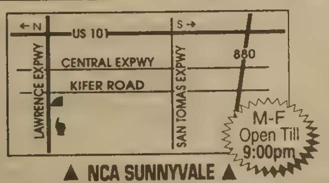

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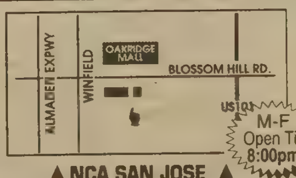

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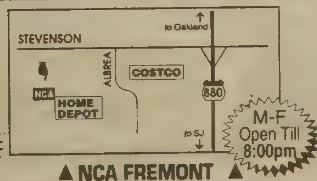

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Brand new with 5-year factory warranty

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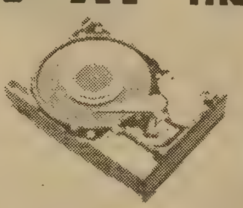
1.0GB 3.5"X1" FAST SCSI-II

- MC4110S
- 8.5ms Seek Time
- 512K Cache
- 5400RPM
- 3.5"X1" Low Profile



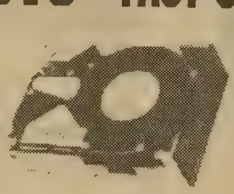
Novell Labs Tested & Approved

$599

EXTERNAL...$699

1.75GB 3.5" FAST SCSI-II OR IDE

- MC2217S/A
- 10ms Seek Time
- 5400RPM
- 3.5"



$888

EXTERNAL...$999

IDE

	MODEL	RPM	SPEED	SIZE	INTERNAL
1.05GB	MC4110A	5400	8.5ms	3.5"	$659
1.75GB	MC2217A	5400	10ms	3.5"	$899

SCSI

	MODEL	RPM	SPEED	SIZE	INTERNAL	EXTERNAL
1.0GB	MC2210AV	Audio/Visual			$729	$839
1.0GB	MC4110	5400	8.5ms	3.5"X1"	$599	$699
1.75GB	MC2217	5400	10ms	3.5"	$888	$999
1.75GB	MC2217AV	Audio/Visual			$999	$1099
1.75GB	MC2217DW	Fast Wide Differential			$1299	$N/A
3.0GB	MC1936	5400	11ms	FH	$1988	$2188
3.0GB	MC1936AV	Audio/Visual			$2299	$2499

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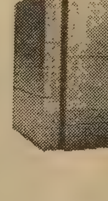
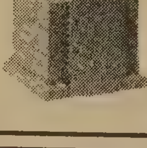
Fault-Tolerant Disk Arrays

Call for Best Prices



MICRODISK®

Stackable External Subsystems



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2.1GB 3.5" FAST SCSI-II

- HP C2490
- 8.9ms Seek Time
- 6400RPM
- 500,000RPM
- 5-Yr. Warr.
- 57 Mbits/s Trans. Rate
- Up to 10Megabytes/s (synchronous)

$1279

EXTERNAL.....$1389

1.05GB 3.5"X1" SCSI-I

Formatted Capacity

- HP C3323A
- 10.5ms Seek Time
- 5400RPM
- 300,000 MTBF
- 5-Yr. Warr.
- Up to 24 Mbits/s Trans. Rate
- Up to 10 Mbytes/s Trans. Rate (synchronc

$759

EXTERNAL $869

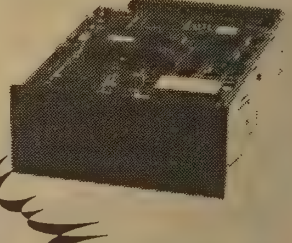
FUJITSU®

Lowest* Price Guaranteed

1.0GB SCSI-II 3.5"

M2694ESA

- 3.5" HH Drive
- 10ms Seek Time
- 256K Read/Write Cache(SCSI)
- 5-Year Warranty



$629

Novell Labs Tested & Approved

5 YEAR WARRANTY

LOWEST NCA PRICES

SCSI

CAPACITY	M/N	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
240MB	M2637SA	Notebook	11ms	3.5"	$359	N/A
530MB	M2684SA	*STATE OF THE ART*			$399	$519
1.0GB	M2694ESA	256K	10ms	3.5"	$629	$729

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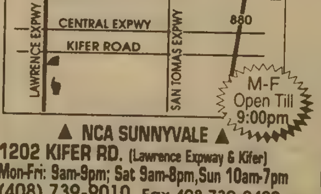

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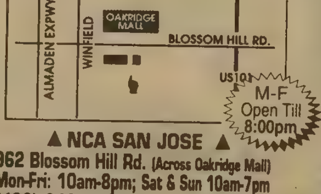

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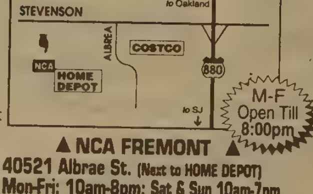

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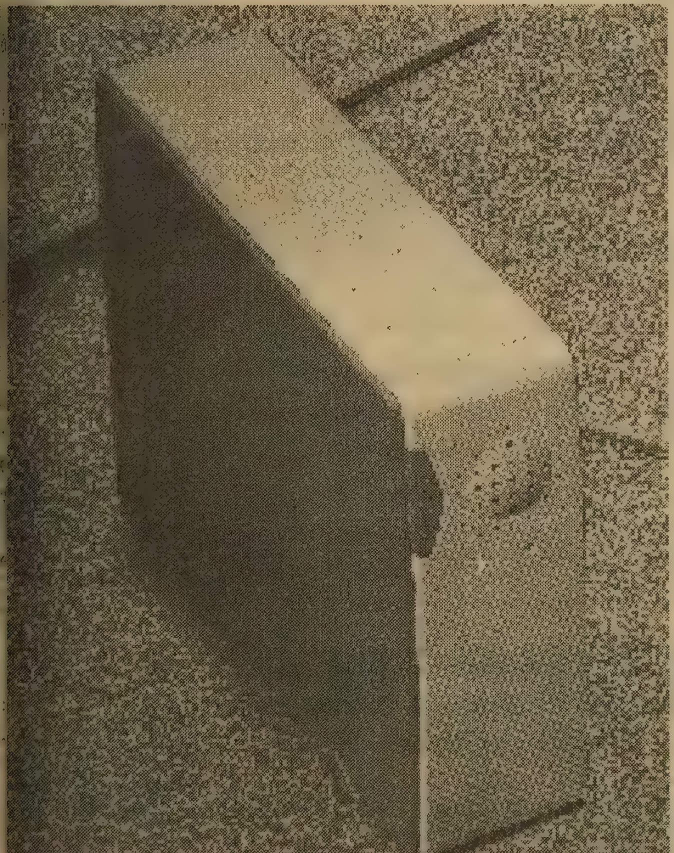
- EXTERNAL SCSI CD ROMS
- EXTERNAL SCSI OPTICALS
- EXTERNAL SCSI REMOVABLES



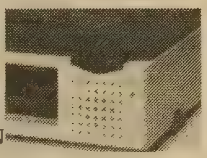
for 3.5"/5.25" or CD- ROM drives

$99

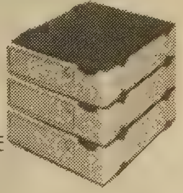
for Full Height drives

$139

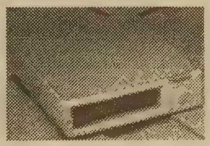
DETACHABLE DUST FILTERS:
The Barracuda series guarantees protection for your sensitive M/O drive heads by a specially designed filter system that can be removed and washed as often as you think is neccessary. The drives are also protected by a refined ventilation system that ensures a steady flow of air.



DISK ARRAY DESIGN:
The entire Barracuda series has been designed to match the hardware structures as defined by Disk Array. All models feature and an AC-OUT socket at the rear panel, a state-of-the-art cooling system, and (optional) brackets that allow for the continuous stacking of additional mass storage devices.



FLEXIBLE POSITIONING:
With the Barracuda series, you can offer customers a variety of operation options. All cabinets can be used in either horizontal or vertical position and feature (optional brackets) that enable you to stack as many storage systems as you can.



UNIVERSAL POWER INPUT:
Ranging from 90-265 VAC, the Barracuda series power supplies are approved by UL, CSA and TUV, and as they boast a metal made precision structure, your mass storage system will definitely meet FCC & BZT(FTZ) requirements.

DISTINCT VISUAL IDENTITY:
The Barracuda has been designed to accommodate the broadest range of external mass storage products while giving you theadvantage of clear design characteristics that are neccessary to establish a distinct image and brand name awareness.

OPTIONS:
REMOVABLE H.D.D. KIT $49

Thanks to a special frame design hard drives can be easily removed, while the power is automatically cut off to protect the circuits, and if you consider that there is even an ID switch connector for SCSI, you will certainly agree that the Barracuda series is much more that just a pile of boxes...

STACKER KIT includes: $19

4 Stackable Brackets, SCSI 50 to 50 Centronics cable (<10"), Power cord male-female(<10")

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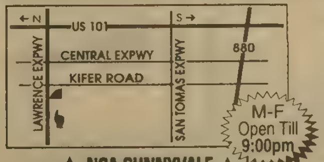

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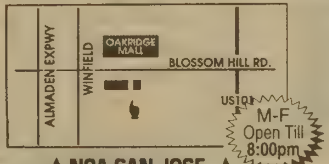

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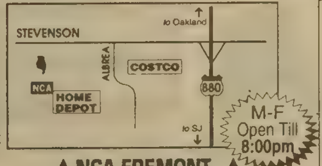

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- 9 Software Titles

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- 16-Bit Digital Stereo Sound Card
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- Photo CD Multimedia Ready
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- Amplified Speaekrs
- 15 Software Titles

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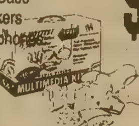

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EXTERNAL KIT For Pro Audio Spectrum (allows SCSI Ext. Connection)	$49
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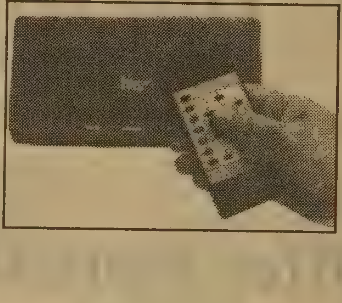

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ORCHID SEE Page 21

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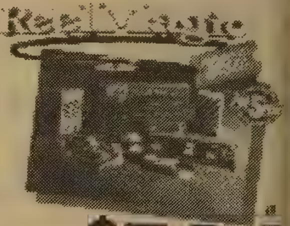

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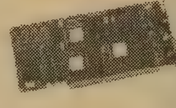

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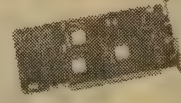

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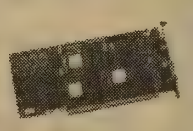

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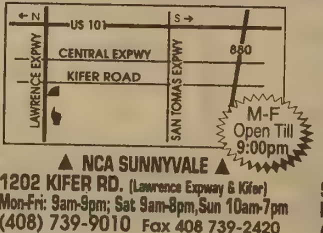

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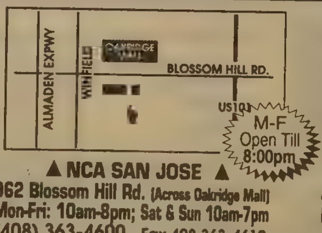

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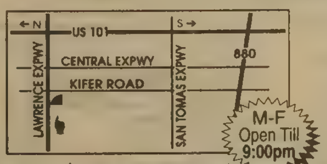

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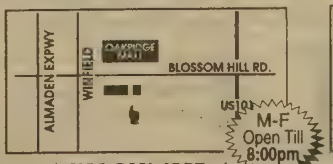

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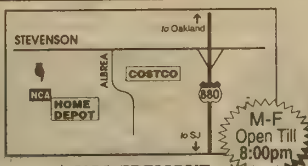

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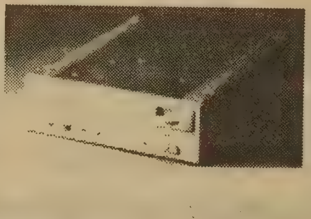

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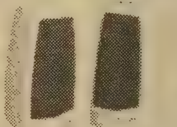

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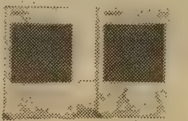

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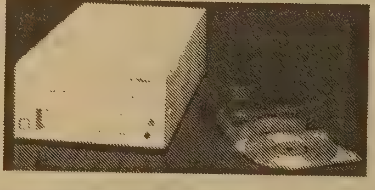

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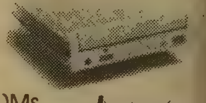

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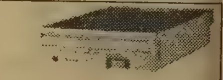

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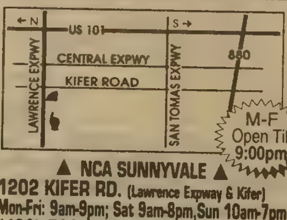

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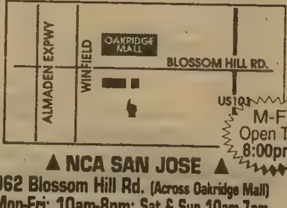

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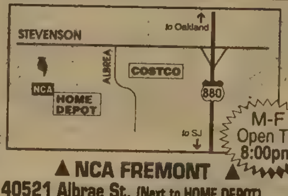

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CD ROM KITS & D

MORE

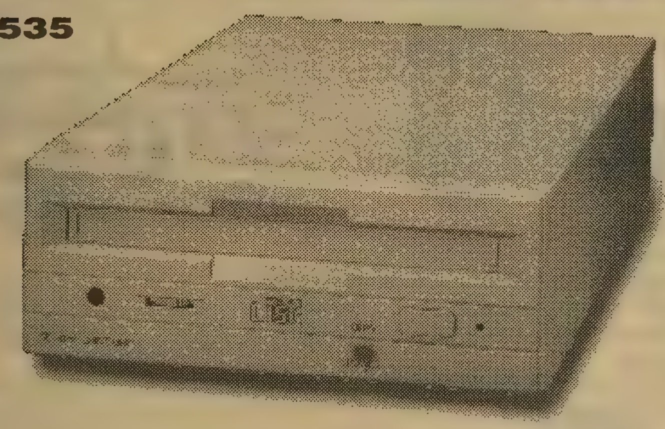
CHINON

Dual Speed, Multisession-A Multimedia Workhorse!

PCComputing BEST October 1993 Chinon CDX-535

PC MAGAZINE EDITORS' CHOICE February 22, 1994 Chinon CDX-535

CD-535



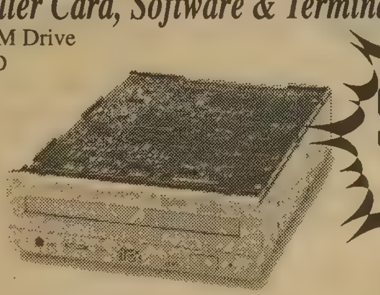
Chinon's new 535 Series CD-ROM drives feature MPC™, Photo CD™, and QuickTime™ compatibility. These incredibly fast drives deliver CD-ROM data at a double speed of 300K per second and feature a SCSI-2 interface for use with both Macintosh and PC compatible computers.

The 535 Series CD-ROM drives are proven multimedia performers designed to excel in both MPC and QuickTime applications. Available for either internal or external installation, these drives work with ISO 9660, High Sierra, Macintosh HFS, XA, Multisession Photo CDs and standard audio compact disks.

Internal SCSI-II Dual Speed CD ROM

With SCSI Controller Card, Software & Terminator

- ▶ Internal SCSI-CD ROM Drive
- ▶ Multisession Photo CD
- ▶ XA Compatible
- ▶ 256K Buffer
- ▶ 220ms Seek Time
- ▶ Double Doors
- ▶ Sealed Mechanism
- ▶ SCSI Controller Card
- ▶ Cable



$239

Internal Unit Only.....$219

Includes Caddy & Manual

External SCSI-CD Dual Speed CD ROM Kit

With SCSI Controller Card, Software & Terminator

- ▶ External SCSI-CD ROM Drive
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- ▶ XA Compatible
- ▶ 220ms/256K Buffer
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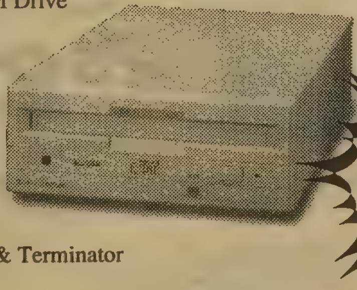
- ▶ Drivers
- ▶ Audio Play
- ▶ Software
- ▶ Caddy
- ▶ Selectware Discription & Terminator



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External Unit Only.....$379

Includes Caddy & Manual

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Presenting the Complete PC Multimedia Solution

DIGITALEDGE CD™ 3X

MULTIMEDIA UPGRADE KIT

- Sound Blaster 16 with ASP Chip
- Creative Labs Triple Speed CD ROM
- Microphone included
- High quality Stereo speakers:
- The most valuable CD ROM titles Bundle includes
  - Aldus PhotoStyler, Macromedia Action digital Video Software Toolworks Multimedia Encyclopedia, Authorware Star, Microsoft Works for Window, Microsoft Bookshelf

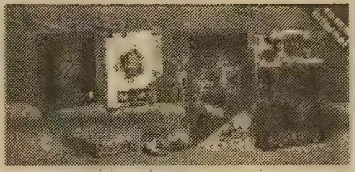
$649

OMNI 3X

TRIPLE SPEED UPGRADE KIT

- Triple Speed Drive
- Super Software Bundle:

New Groiler Encyclopedia
Aldus Photostyler SE
Gallery Effects, Altamira
Kai's Powertools, HSC Digital Morpht



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GAME BLASTER CD 16™

ADVANCED MULTIMEDIA UPGRADE KIT

- Game Blaster 16
- Double Speed CD ROM Drive
- High Performance Joystick & Speakers
- Top Games Bundled CD ROM Titles

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- Stereo Speakers
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- Windows 3.1 and OS/2 2.0 Compatible

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- Stereo Speakers
- Top Quality Software

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Sound Blaster Value 8-Bit Sound Card With software	$59
Sound Blaster Pro Value Edition	$79
Sound Blaster 16 Basic Value Edition	$99
Sound Blaster 16 MultiCD/with ASP	$129/165
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Video Spigot (Video Capture)	$219
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Sound Blaster 16 SCSI-II/with ASP	$149/189

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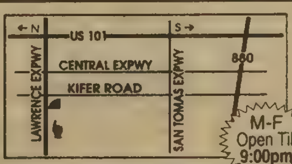

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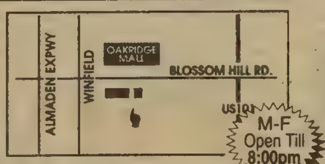

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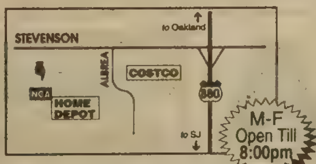

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MULTIMEDIA

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YAMAHA POWERED MONITOR SPEAKERS

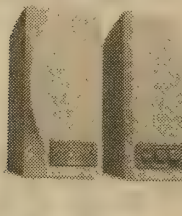
YST-M5

- 3 Watts per channel
- Video Shielded
- Active Servo Technology delivers Life-Like sound
- 90Hz-20KHz ± 3dB
- Includes AC Adapter

$69

YST-M10

- 10 Watts per channel
- Video Shielded
- Active Servo Technology delivers Life-Like sound
- 80Hz-20KHz ± 3dB
- Includes AC Adapter
- 4 Star Rating "MACWorld April 1994"

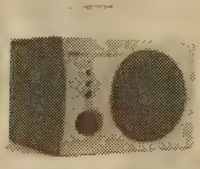


$89

YAMAHA POWERED SUBWOOFER

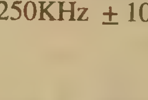
YST-MSW10

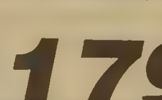
- 25 Watts
- Video Shielded
- Auto On/Off Switching
- Active Servo Technology delivers Life-Like sound
- 35Hz-250KHz ± 10dB



$179

SPEAKER BUNDLES:





YST-SS1010 includes YST-M10 speakers & Subwoofer...$249

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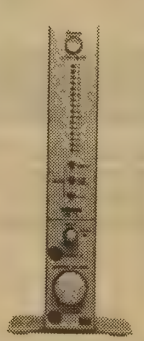
YAMAHA EXTERNAL MIDI SOUND CARD

CBX-T3

- Advanced Wave Memory
- 192 Instrument & Effect Voices
- 10 Different Drum & Percussion Sets
- Connects Via Serial Port on MIDI Port
- Available for PC or MAC
- Includes Passport Trax™ MIDI Player SoftwareBundle
- "Best Synthesizer" Multi-Media World

PC or MAC



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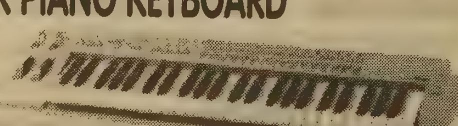
YAMAHA MIDI-CONTROLLER PIANO KEYBOARD

K-3



- Professional Quality Keyboard
- Velocity Sensitive
- Pitch Bend Wheel
- Modulation Wheel
- Operates Sound Cards with MIDI Port

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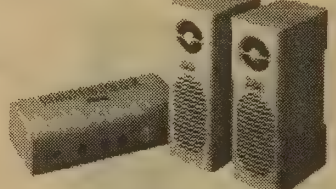
High Power Quality Multimedia Systems

ACS50

Personal Computer Speaker System



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- Shielded Satellite Speakers Mount to Monitor
- Two Line-in Jacks Mix Two Audio Sources
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- ON/OFF Switch to Control Power to Speaker
- Headphone Output Connector for Private Sounds Monitoring
- Amplifier Control Module with Built-In Bass & Treble Boost Circuitry

ACS100.1

Amplified Speaker System

$99.99

- Volume Control to adjust Combined speaker output
- Bass Control adjusts low frequency output
- Treble Control adjusts high frequency output
- Headset Input Jack bypasses speakers for private audio monitoring
- 3 inch magnetically shielded Mid/Bass Driver
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Computer Speaker System with Subwoofer

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- Volume Control to adjust Combined speaker output
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- Balance Control adjusts output level of each speaker
- Bass Volume for variable control of subwoofer output
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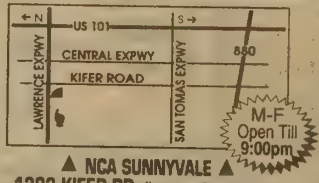

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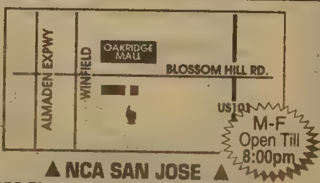

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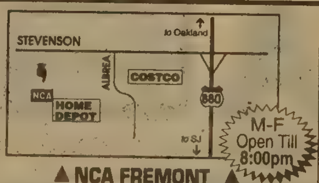

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WIRELESS STEREO HEADPHONE

Enjoy the freedom of wireless with this Recoton W 500 Wireless Stereo Headphone. New 900Mhz signals travel through walls & Floors up to 150 ft. away! Watch & listen to your multimedia computer without disturbing others at the office or at home!

- **No Wires**
- **No line-of-sight limitations**
- **Built-in rechargable battery**

W500

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WIRELESS STEREO HEADPHONE

The ultra small receiver features volume control, tuning control, on/off switch and a belt clip. New 900Mhz signals travel through walls & Floors up to 150 ft. away! Watch & listen to your multimedia computer without disturbing others at the office or at home!

- **No Wires**
- **No line-of-sight limitations**
- **Use your favorite stero head phone or the high performance headphone included**

W200SX

$79

LIGHTWEIGHT DIGITAL STEREO HEADPHONES

This is a lightweight digital stereophone with foldaway earcups for compact storage. Supplied with a 1/4" adapter for home use and a convenient carrying pouch for portable applications.

EG24

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UNIQUE LIGHTWEIGHT STEREO HEADPHONES

This unique, lightweight stereophone features 30mm Samarium Cobalt speaker elements and a single entry cord with in-line volume control. Includes 1/4" adapter.

EG18

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MICRO IN-THE-EAR EARBUDS

This micro "in-the-ear" stereo earbud is supplied with a deluxe winder case and unique micro volume control.

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SPECIALIZING IN CACHE CONTROLLERS!!
SPECIALIZING IN COMPATIBILITY!!

IDEal PCI Cache Controller and Accelerator

ANOTHER PLUG-N-PLAY SOLUTION TO ENSURE OPTIONAL COMPATIBLITY & SPEED

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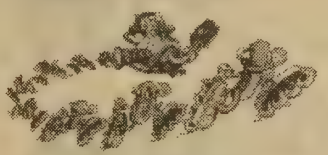

- 20MB ETR
- 4 IDE hard drives
- 4GB for all drives
- Ease of use, software programmable, NO jumpers

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IDEal VL-Cache Controller and Accelerator

Perfect for anyone with large files such as windows base applications, CD-ROM videos, and for those who HATE waiting for hard drive access!

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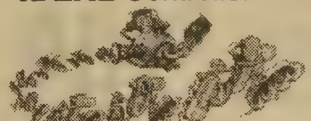

- Supports up to 16MB of on-board cache
- Supports up to four IDE Hard Drives
- Total capacity for alldrives is up to 2GB
- Compatible with DOS, Windows, OS/2 and major operating systems

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Plug-N-Play solution to eliminate throughput bottlenecks, and not occupy CPU Time.

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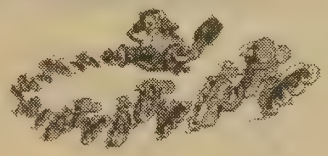

- Supports up to 16MB of on-board cache
- Supports IDE drives up to 4GB in capacity
- Supports up to 4 IDE hard drives
- Compatible with DOS, Windows, OS/2 and major operating systems.

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IDEAL -PCI™:The IDE Controller and Accelerator for PCI-Bus

Atronics again is the 1st to introduce new technology (PCI 8/93) and ensure Compatibility!

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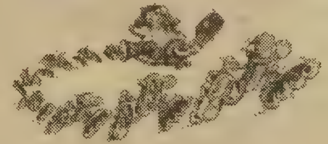

- ANSI ATA 3.0 compatible
- PCI version 2.0 compatible
- Compatible with DOS, Windows, OS/2 and major operating systems.
- 13MB maximum PCI-bus Data Transfer Rate
- Software programmable cycle times to adapt to different IDE transfer rates.
- Supports up to 2 IDE hard drives

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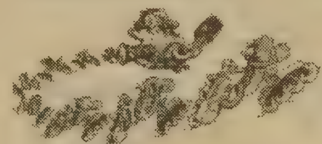
ATI-IDEAL Enhancer

Perfect buy with new hard drives!

IDEAL *Enhancer*



- Increase hard drive performance by 40-80%
- Plug-n-play for easy installation-NO software required
- No cables to connect, No jumpers to set
- It's hassel-free
- Increase your hard drive performance with multiple-sector transfer
- Compatible with all major operating systems

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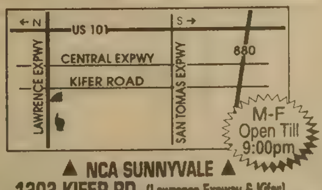

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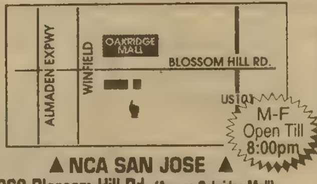

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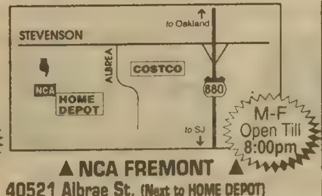

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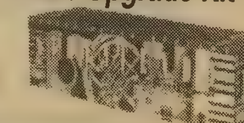
QUALITY BRAND NAME PRODUCTS

TURTLE BEACH SYSTEMS

CRESCENDO

Learn To Play The Piano, Create And Jam With Your Own Computerized Band!

Music Upgrade Kit



•Crescendo™includes a full-size professional 49-key music keyboard, the Miracle Piano Teaching system™software, Wave/SE™sound editor Stratos™MIDI sequencer software, and Band-In-A-Box™musical accompaniment software.

$299

rio Professional MIDI Synthesizer Module

•Add Turtle beach quality MIDI sound to your Turtle Beach Tahiti, Sound Blaster 16 or any other WaveBlaster compatible synthesizer connector.
•Ability to add new instruments via our SampleStore™ sample RAM. Never be limited to factory supplied instrument again. Comes with 256K of RAM for new samples, user upgradable with standard SIPPs to 4MB.
•Real-Time Effects Processor. Place your music in a studio, concert hall or stadium with a variety of effects such as reverb & echo. Effects are software-based for future upgradability.

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maui Wavetable Synthesizer Upgrade

•Now you can have all of the power of today's hottest new sound cards, plus a few new wrinkles, and keep your old sound card around for games!
•Ability to add new instruments via our SampleStore™ sample RAM. Maui is definitely the best of both worlds!

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Digital Audio, Stereo Mixer, MIDI Synthesizer, Digital Signal Processor, Audio Performance, MIDI Interface (Sample Store)

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Professional Sound Editing Software For Your Windows 3.1 Compatible Sound Card

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Wave provides recording, editing, and playback of digital sound. You can rearrange a piece of recorded music, add perfect fade-in and fade-out, choose from a wide selection of sound special effects like reverb, digital delay, unwanted pauses and mistakes from narration tracks, even create incredibly unusual system sounds. **NEW : Digital Effects Processor, On-line Context-Sensitive Help Function, Speed Controller, & Support for Microsoft Compression**

Version 2 Includes:

WAVE Q
Automated EQ Presets

EFX CLIPS
Automated Effects Presets

- 6 new sound processing effects
- Sound speed control
- Contex-sensitive online help
- Microsoft ADPCM compression

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THE TURTLE TOOLS Essential tools to use your sound card or MPC to its fullest FOR MULTIMEDIA

- **Midisoft Session**™ - MIDI sequencer for developing or editing musical compositions
- **MIDI tune up**™ - MINI file editor for non-musicians. Lets you graphically change tempo, key instrument and other setting
- **KeyPlayer**™ - Non-musicians can play and record music using just your PC keyboard.
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- **Sound Bank**™ - Over 300 Sound Effects and Muscial pieces in 4 different WAV formats and Redbook audio for professional quality!

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KARAOKE Karaoke Software

- **Pitch Control** - with the click of a mouse you can customize any song to suit your vocal range.
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- **Speed Control** - Alter playing speed to suit anybody, old or young.
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- **Windows Sound Card Compatible** - Turtle Beach MIDI Karaoke supports any Windows 3.1 sound card. The MIDI section is totally General MIDI compatible.
- **Bitmap Import** - import any .BMP file to create custom backgrounds for your song text to scroll

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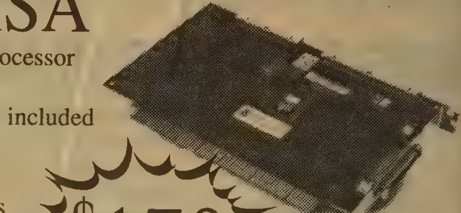
qlogic Corp. *Affordable High Performance SCSI Controllers*

Fast!SCSI™ EISA



- Patented 400 Series high-speed SCSI Processor
- 10MB per second fast SCSI-II
- Free CorelSCSI for CD-ROM and HDD included
- Comprehensive software support
- 50-pin internal SCSI Cable provided with support for up to three internal drives
- 5-Year Warranty

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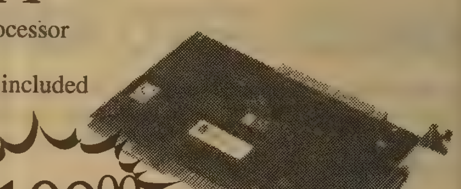
With Floppy Connector....$199

Fast!SCSI™ ISA

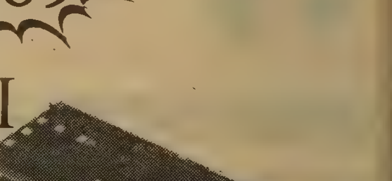


- Patented 400 Series high-speed SCSI Processor
- 16-bit PIO Data Transfer>3MB/Sec.
- Free CorelSCSI for CD-ROM and HDD included
- Comprehensive software support
- 50-pin internal SCSI cable provided
- Supports up to 7 SCSI devices
- 5-Year Warranty

$109.99

***FAST!*SCSI ISA FL**
With Floppy Connector....$124.99

Fast!SCSI™ VESA Local FL



- Patented 400 Series high-speed SCSI Processor
- Supports 33MHz & 50MHz
- 32-bit VLB Host Data Transfer
- Free CorelSCSI for CD-ROM and Winchester drives
- 50-pin internal SCSI cable provided for up to 3 devices
- Comprehensive software support
- **FLOPPY CONNECTOR, SUPPORTS 2 FLOPPY DRIVES**
- Supports up to 7 SCSI devices
- 5-Year Warranty

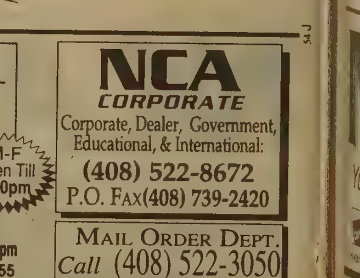
$189

Fast!SCSI™ IQ PCI

- 12Mips RISC SCSI Processor
- Bus Master
- Support Fast & Wide SCSI-II
- 4000 IO/Sec. Throughput
- Corel SCSI Ver. 2 with Netware Support
- Full Software Driver Support

$289

Fast!SCSI™ PCMCIA



- Patented 400 Series high-speed SCSI Processor
- 16-bit PIO Data Transfer>3MB/Sec.
- Free CorelSCSI for CD-ROM and Hard Drive
- Occupies a single PCMCIA slot
- Comprehensive software support
- Supports up to 7 SCSI devices
- 5-Year Warranty

$179

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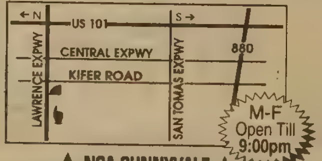

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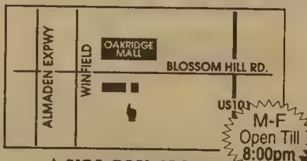

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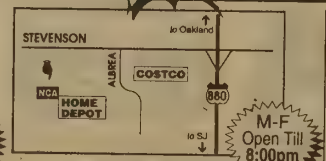

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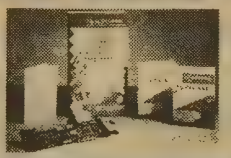
CONTROLLERS

MORE

SCSI CONTROLLERS

adaptec



SCSI CONTROLLERS

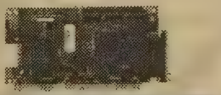
MODEL	DESCRIPTION	PRICE
1505	TOTAL CD 16-BIT SCSI-II	$49
1510	CD ROM 16-BIT -SCSI CARD KIT	$89
1522	16-BIT 7HD/2FD KIT	$139
1542CF	BUS MASTER COMPLETE KIT	$238
1542C+	BUS MASTER KIT WITH COREL SCSI	$314
1640	MICROCHANNEL FOR PS/2, 7HD	$299
2742	**EISA KIT, 14HDS**	**$369**
2742W	Fast Wide SCSI EISA	$379
2842A	**Fast SCSI-II VESA**	**$239**
APA-460	Slim SCSI PCMCIA SCSI Card	$289
AHA-2940	PCI SCSI MASTER RISC-BASED I/O	$279
AHA-2940W	PCI FAST-WIDE SCSI	$359
AMM-1570	**FULL SCSI WITH ADVANCED AUDIO**	**$319**

DATA TECHNOLOGY CORPORATION

SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
DTC3270VL	32-Bit VESA 7SCSI/2FD SCSI	$119
DTC 3280AS	16-Bit ISA to SCSI Host Adapter	$104
DTC3280AS	EISA to SCSI 32-Bit Host w/Cache	$499

American Megatrends



SCSI CONTROLLERS

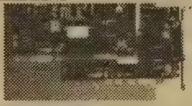
DESCRIPTION	PRICE
FastDisk NC EISA non-cache SCSI cont.	$295
FastDisk EISA Caching Controller up to 16MB	$389
FastDisk VLB VESA Local Bus Caching Controller	$393
FastLAN SCSI	$439

PROMISE TECHNOLOGY, INC.

SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
DC-440	VLB SCSI-2 BUS MASTER w/ IDE Interface	$199

TRANTOR



FULL KITS W/DRIVERS FOR CD-ROM/OPTICAL... ETC.

SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
T228	MICROCHANNEL, 7HD	$139
T338	PARALLEL PORT to SCSI ADAPTER	$99
T348	PARALLEL PORT to SCSI PLUS	$149
T358	Parallel Port to SCSI Plus Enhanced	$189

TRANTOR SCSI Works
ASPI Device Drivers For: $49
CD-ROMs, Photo CD, Tape Drives, Syquest, Opticals, Scanners, Hard Drives
TAPEMATE II Back-up software & Music Box-Audio CD Software

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Easiest to use, PLUG & PLAY with CD Drivers

SCSI CONTROLLERS

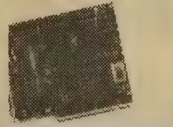
MODEL	DESCRIPTION	PRICE
IN2000	16 BIT 7HD/2FD "Easiest to use"	$175
IN2000PRO	With COREL SCSI	$215
AL1000	SCSI To PARALLEL	$159
AL1000PRO	Above With COREL SCSI	$185

FUTURE® DOMAIN

SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
TMC850	8-BIT W/BIOS	$59
TMC1670	SVP 16-BIT SCSI VALUE PACK	$149
TMC1680	SVP 16-BIT VALUE PACK 7HD/4FD	$139
SCSI2GO	PCMCIA FAST SCSI-II TYPE II	$279

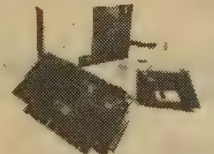
Acculogic



SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
20	PCI SCSI Host Adapter, Sup. Wide SCSI-3	$219

BUSLOGIC



SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
BT545S	ISA Bus Master Fast SCSI Adapter Kit	$208
BT445S	**Bus Master Fast SCSI Kit for VL Bus**	**$199**
BT742A	EISA Bus Master SCSI-II Adapter Kit	$329
BT747S	EISA Bus Master Fast SCSI	$364
BT757S	FASTWIDE SCSI CARD	$369
BT946C	Bus Master Fast SCSI for PCI Local Bus	$239

ADVANSYS. SCSI-2 VL BUS MASTER

•32-bit, 120MB/sec. burst mode •10MB/sec. synchronous on Fast SCSI
•SCSI II, Bus Master DMA

SCSI CONTROLLERS

AdvanSCSI *Gold Network* Kit

- ABP-842 VL to SCSI 2 host adapter with floppy controller
- AdvanWare configuration/installation software
- **COREL SCSI Network manager**
- NOVELL NetWare Utilities for RAID 4 & 5
- Internal ribbon cable, VHS video installation guide
- User's manual

$369

AdvanSCSI *Silver Multi-Media* Kit

- ABP-842 VL to SCSI 2 host adapter with floppy controller
- AdvanWare configuration/installation software
- **COREL SCSI Version 2**
- Internal ribbon cable, VHS video installation guide
- User's manual

$229

IDE CONTROLLERS

NCA'S STANDARD IDE

IDE CONTROLLERS

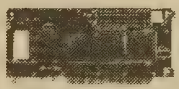
MODEL	DESCRIPTION	PRICE
200	2HD/2FD CONTROLLER W/CABLES	$14
211	2HD/2FD W/2 SERIAL, 1PAR, 1GAME	$23
NCL53	SMART CONT. W/BIOS EASY INSTALL	$49
223	**2HD/2FD for VESA LOCAL BUS I/O**	**$59**
15C	CACHING (UP TO 8MB), 2HD, 2FD **UltraStor**	**$159**

BUSLOGIC

IDE CONTROLLERS

MODEL	DESCRIPTION	PRICE
BT510A	IDE Cache Contoller For PC/AT Sys.	$89
BT410A	IDE Cache Controller for VLB	$129
BT910A	IDE PCI Cache Controller	$169

PROMISE TECHNOLOGY, INC.



IDE CACHING CONTROLLERS

IDE CONTROLLERS

MODEL	DESCRIPTION	PRICE
DC-200	ISA IDE 4HD/2FD, 2.88MB FLOPPY SUPPORT	$89
DC-420VLB	VESA IDE 512K CACHE	$99
DC-4030VL-2	VESA IDE 2.88MB SUPPORT 4HD/2FD	$109
DC-200M	ISA IDE 512K CACHE 4HD/2FD 2.88 SUPPORT	$99
DC2032	ISA Caching Controller	$139

DATA TECHNOLOGY CORPORATION

IDE CONTROLLERS

DESCRIPTION	PRICE
DTC 2278AS VESA Multi I/O 2s/1p/1g	$39
DTC2277VLL VESA Caching IDE Controller	$149
DTC 2280 16-Bit Super I/O 2FD/2HD 2s/1p/1g	$19.99

WONDER 16550 IDE CARD

2 IDE DRIVES/2 FLOPPY
2 HIGH SPEED 16550 SERIAL PORTS
1 PARALLEL PORT / 1 GAME

$69

16650 I/O Controller......$45

PORT-FOLIO 16550

13-Port Super I/O Card
4 INTEGRATED NS16550 HIGH SPEED UARTs

- 2 IDE HD • 4 Floppy
- 2 Parallel • 4 Serial
- 1 Game

QUICKPATH

$119

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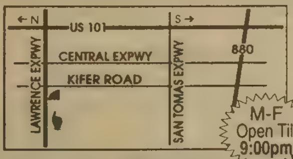

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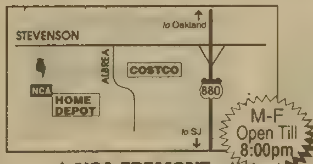

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NEC

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- 14", .28mm
- 1024X768
- Non-Interlaced
- Flat Screen

SAVE $25

$299*

*Price After Instant Rebate
Rebates end 9/30/94

3V

- 15", .28mm
- 1024X768
- Non-Interlaced
- Flat Screen

SAVE $40

$415*

*Price After Instant Rebate
Rebates end 9/30/94

3FGe

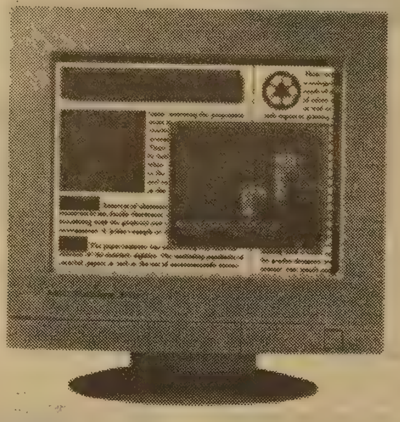
- 15", .28mm
- 1024X768
- XGA-2 Compatible

$549

4FGe

- 15", .28mm
- 1024X768
- Anti-Static
- Flat Screen

$629



5FGe

- 17", .28mm
- 1024X768
- 76Hz Refresh

$949

5FGp

- 17", .28mm
- 1280X1024
- Opticlear

$1075

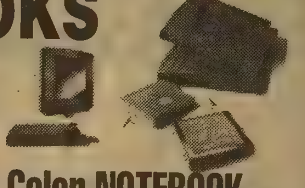
6FGp

- 21", .28mm
- 1280X1024
- Opticlear

$1999

NOTEBOOKS

NEC



VERSA E75 Active Color NOTEBOOK

486DX2/75MHz 340MB/4MB RAM

- SL Enhanced i486™ DX2
- 8Kb Cache
- Built-in Numeric Co-Processor
- 4MB RAM (exp. to 20MB)
- 2 PCMCIA Slots
- TFT Active-Matrix Color Screen
- User Removable/Reversable Screen
- MS-DOS, Windows Preloaded
- 3 Yr. Warranty

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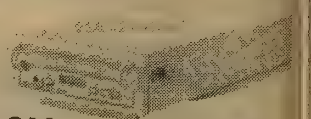
SCSI CD ROMs



3Xi Internal SCSI CD ROM 450Kb/Sec. Transfer Rate 190ms Seek Time	**$419**
3Xe External SCSI CD ROM 450Kb/Sec. Transfer Rate 190ms Seek Time	**$459**
3Xp Portable SCSI CD ROM 450Kb/Sec. Transfer Rate 240ms Seek Time	**$379**
4X PRO External SCSI CD ROM 600Kb/Sec. Transfer Rate 180ms Seek Time	**$699**

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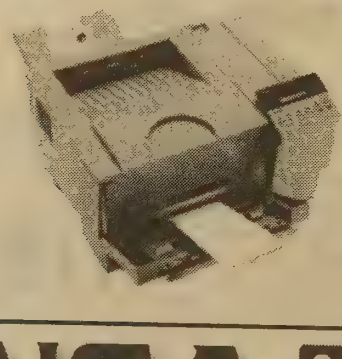

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600 DPI Postscript

- 10ppm, 600dpi laser quality
- 7MB RAM
- Level 2 PostScript/PLC-5
- 35 resident Adobe scalable
- 14HP LaserjetIII fonts

$1359

Silentwriter 95fx

- Fax Capability
- 6ppm
- 300dpi laser quality
- 2MB memory expandable to 5MB
- Envelope Feeder
- 35 resident Adobe Scalable Fonts
- Apple Talk built in

$949

Silentwriter 610

- 6ppm
- 300dpi laser quality
- Uses Memory from system CPU
- 14 Window True Type Fonts
- 20 NEC True Type Fonts

$489

Silentwriter 640

- 6ppm
- 300dpi laser quality
- 3MB RAM
- Level 2 Postscript
- 17 resident Adobe scalable
- 35 True Type Fonts

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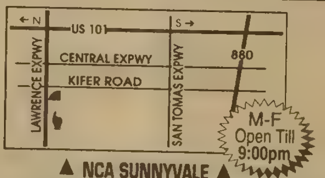

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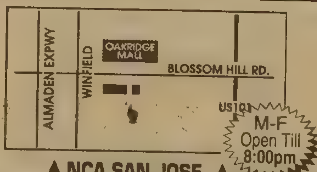

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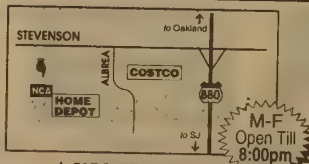

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S3 86C805 Graphics Chip with 1MByte Highspeed DRAM
256 Colors with 1024X768
Top Resolution of 1280X1024
80Hz at 1024X768 Pixels
VLB, PCI

$89 VLB

miroCrystal 16SI

GRAPHICS Chip S3 86C805i with 2MBytes DRAM
256 colors with 1408X1024 Pixels
Top Resolution of 1408X1024
100Hz at 1024X768 Pixels
VLB, PCI

$129 PCI

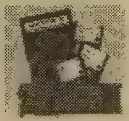
miroCrystal 10SD

S3 86C805 Graphics Chip with 1MByte Highspeed DRAM
256 Colors with 1024X768
Top Resolution of 1280X1024
80Hz at 1024X768 Pixels
VLB, PCI

~~$139~~ SALE VLB **$149** PCI

miroCrystal 16SI

GRAPHICS Chip S3 86C805i with 2MBytes DRAM
256 colors with 1408X1024 Pixels
Top Resolution of 1408X1024
100Hz at 1024X768 Pixels
VLB, PCI



$219 VLB ~~$229~~ SALE PCI

miroCrystal 20SD

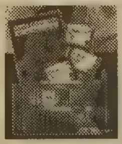
Graphics Chip S3 Vision864™ with 2MBytes DRAM
65,536 Colors in 1024X768 pixels mode
Top Resolution of 1408X1024
100Hz at 1024X768 Pixels
VLB, PCI

$249 VLB **$259** PCI

miroCrystal 20SV

Graphics Chip S3 Vision964™ with **2MBytes VRAM**
65,536 Colors in 1024X768 pixels mode
Top Resolution of 1408X1024
100Hz at 1024X768 Pixels
VLB, PCI

64-BIT!



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$399 VLB **$409** PCI

miroCrystal 40SV

Graphics Chip S3 Vision964™ with **4MBytes VRAM**
16.7 million Colors in 1152X864 pixels mode
Top Resolution of 1408X1024
100Hz at 1024X768 Pixels
VLB, PCI

64-BIT!

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$599 VLB **$609** PCI

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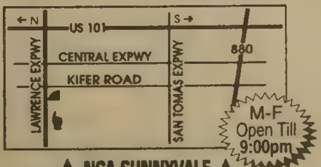

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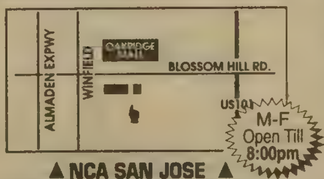

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Miro's DC1 tv Video Capture Board Delivers Full Screen 640X480 Full Motion 30fps Video Capture And Non Linear Audio & Video Editing To The Personal Computer At A Remarkable Price!

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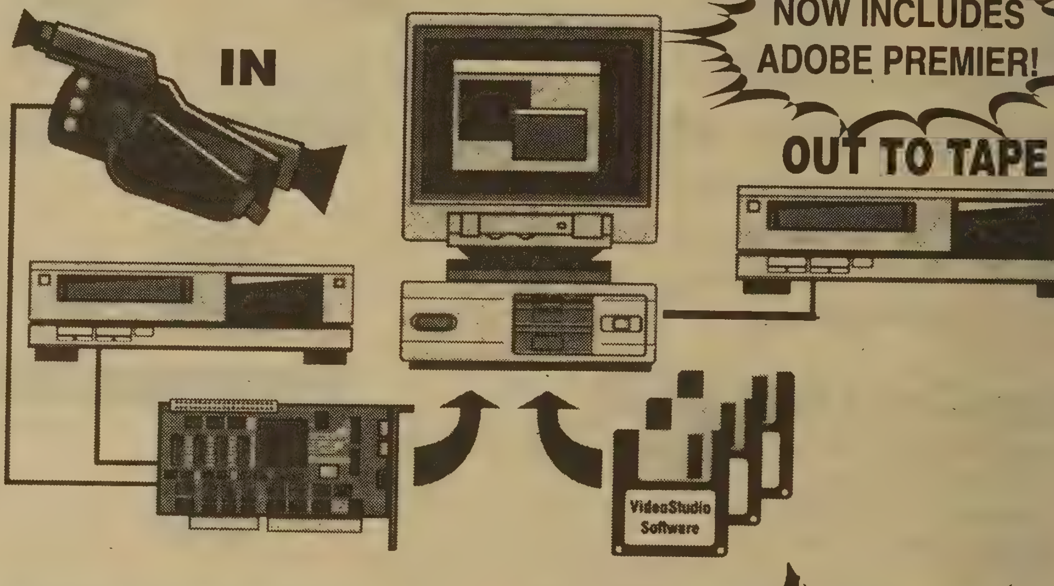
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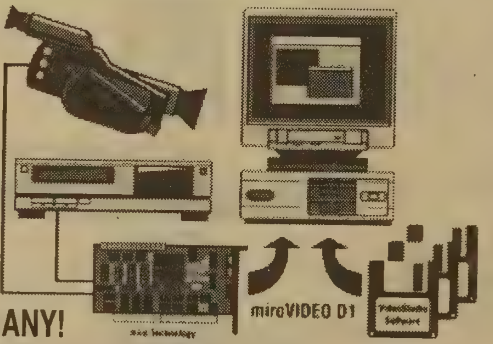
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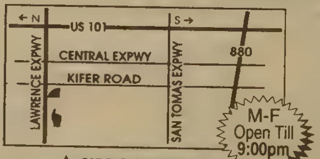
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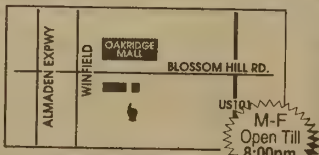
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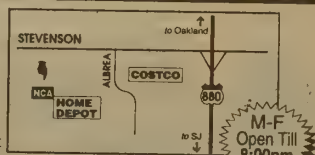
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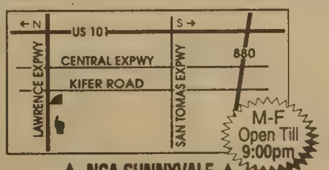

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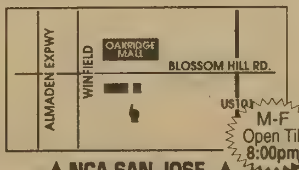

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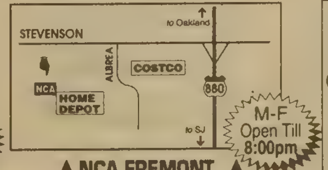

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SPiDER® Graphics, Inc.

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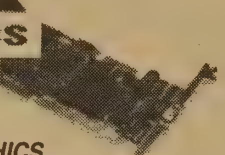

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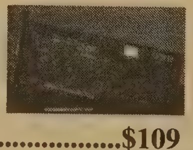

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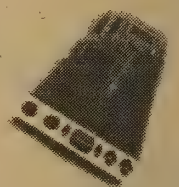

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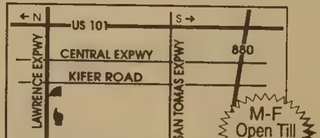

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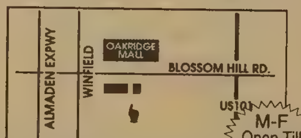

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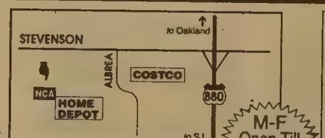

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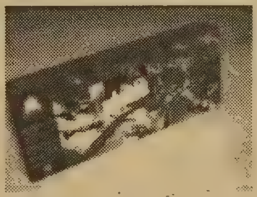

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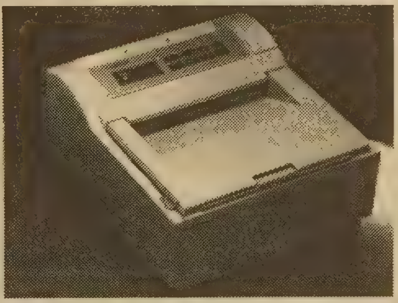

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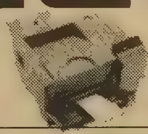

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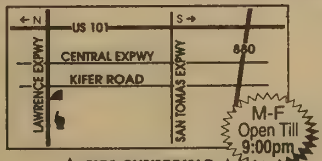

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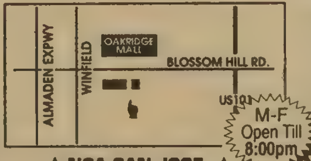

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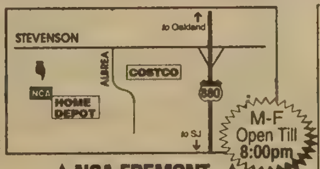

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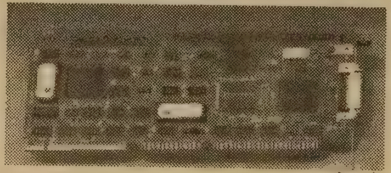

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- 16 Million Colors
- Up to 1280X1024 in 256 colors
- Refresh Rate up to 75Hz (NI)
- Virtual Screen, Adjust Screen and Refresh Rate Check

1MB DRAM w/128C	2MB DRAM w/256C
$129	$189

SPiDER 64VLB/PCI

64-Bit Video Accelerator Card

- 64-Bit video memory interface
- 64-Bit BitBlt
- 16 Million Color in 32-Bit/Pixel format
- 1024X768 in 16 Million Colors ; 1280X1024 in 64K Colors
- High Refresh Rate: up to 75Hz (NI)
- Display memory Expandable up to 4MB
- Virtual Screen, Adjust Screen and Refresh Rate Check
- Bus available: VESA VL-Bus and PCI

2MB DRAM	4MB DRAM
$199	$299

SPiDER 32VLB	
1MB DRAM/2MB DRAM	$95/$135
SPiDER 32VLB Plus	
1MB DRAM/2MB DRAM	$109/$149
BLACK WiDOW VLB/ISA	
1MB VRAM/2MB VRAM	$139/$199

SAMPO

HIGH QUALITY

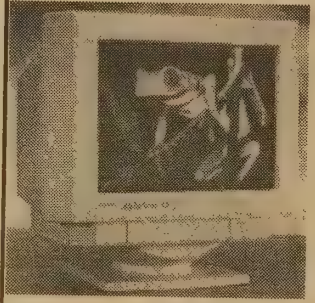
15" AUTOSYNC COLOR MONITOR

energy EPA POLLUTION PREVENTER

- 1280X1024
- .28mm
- NON-INTERLACED
- FLAT SCREEN

$349

17" AUTOSYNC COLOR MONITOR

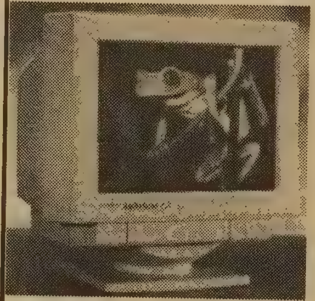


energy EPA POLLUTION PREVENTER

- 1280X1024
- .28mm
- NON-INTERLACED
- FLAT SCREEN

$739

20" AUTOSYNC COLOR MONITOR



energy EPA POLLUTION PREVENTER

- 1280X1024
- .31mm
- NON-INTERLACED

$1049

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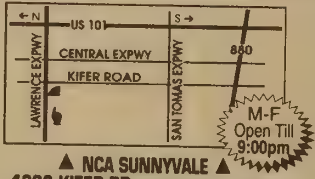

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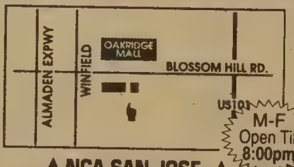

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TAPE BACK-UP

MORE

HEWLETT PACKARD

The most reliable SCSI Tape Backups for MAC, PC or SUN

5GB *External* 4mm 3.5" SCSI DAT TAPE BACKUP

- 732 Kbytes/Sec Transfer Rate (Sustained)
- 5 MB/ Sec (Synchronous)

INCLUDES: 1 CARTRIDGE & NOVABACK BACKUP SOFTWARE

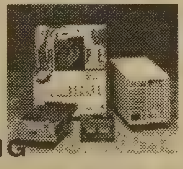
$1029

35480

SCSI 4mm DAT

CAPACITY	MODEL	INTERNAL	EXTERNAL
2.0GB	35470 DAT	$799	$899
4-8GB	35480 DAT	$889	$999
4-16GB	C1533A	$1249	$1359

EXABYTE®



FS1G

1.5 GB SCSI Tape Storage

COMPLETE SYTEM INCLUDES:

- Internal FS1G Tape Drive
- Adaptec 16-Bit SCSI Controller Card
- File Secure Software
- Up to 30 MB/Min. Transfer Rate
- One Data Cartridge

$729

External FS1G Kit...$898
Internal Unit (2501) $519

4mm DAT Cartridge

CAPACITY	MODEL	INTERNAL	EXTERNAL
2.0GB	EXB-4200	$849	$959
5GB	EXB-4200C	$949	$1039

2.5 GB 8mm DAT Subsystem

CAPACITY	MODEL	INTERNAL	EXTERNAL
2.5GB	EXB-8205	$1399	$1649

5 GB 8mm DAT Subsystem

CAPACITY	MODEL	INTERNAL	EXTERNAL
5.0GB	EXB-8505	$2069	$2499
5.0GB	EXB-8500	$2299	$2599

CONNER *The BEST name in SCSI Back-up Drives*

SOF•STOR

for IBM Compatibles, MAC, SUN, & NeXT

Formerly ARCHIVE

SCSI

ANACONDA

- ◆ 36MB/MIN
- ◆ SCSI-2
- ◆ 1/4" TAPE UNIT

1.3GB 2750		2.0GB 2800	
INTERNAL	$799	INTERNAL	$999
EXTERNAL	$899	EXTERNAL	$1099

VIPER™

- ◆ 6MB/MIN
- ◆ SCSI
- ◆ 1/4" TAPE UNIT

250 MB 2150S		525 MB 2525S	
INTERNAL	$317	INTERNAL	$424
EXTERNAL	$424	EXTERNAL	$559
Int. W/Software	$399	Int. W/Software	$549

SCSI 4mm DAT Tape Backups

PYTHON®

- ◆ 11MB/MIN.
- ◆ 1MB Cache Buffer

2 GB. 4320 NT		4 GB. 4324 TURBO	
INTERNAL	$879	INTERNAL	$1049
EXTERNAL	$989	EXTERNAL	$1149

COLORADO MEMORY SYSTEMS INC.

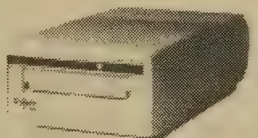
Uses 2120 Tapes

RUNS OFF FLOPPY PORT

CAPACITY	MODEL/TYPE	INTERNAL
120MB	DJ10 JUMBO120	$99
250MB	DJ20 JUMBO250	$159

EXTERNAL KIT WITH CARD AND CABLES KE-10	$109
EXTERNAL TAPE PORT AB-11	$35
FC-10 TAPE CONTROLLER, WITH CABLES	$78
TC-15 HIGH PERFORMANCE 16-BIT CONTROLLER	$168

Trakker™



PARALLEL PRINTER PORT EXTERNAL TAPE BACK-UP SYSTEMS

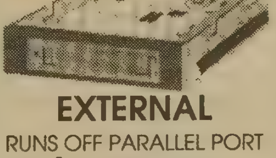
RUNS OFF PARALLEL PRINTER PORT

CAPACITY	MODEL/TYPE	EXTERNAL
120MB	TRAKKER 120	$279
250MB	TRAKKER 250	$317

POWERTAPE 2GB $899
2GB External Tape Backup system

CONNER TAPE•STOR 250MB

TAPE BACKUP
INCLUDES 1 CARTRIDGE



INTERNAL	EXTERNAL
RUNS OFF FLOPPY PORT	RUNS OFF PARALLEL PORT
$149	$299

WangDAT™

Internal

4-8GB $999

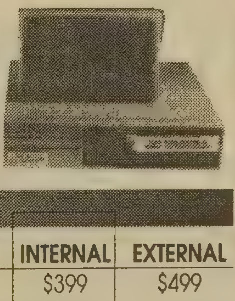
3400DX DAT Tape Backup

External $1099

SCSI 4mm DAT

CAPACITY	MODEL	INTERNAL	EXTERNAL
2.0GB	3100 DAT	$899	$999
4-8GB	3200 DAT	$999	$1099

WANGTEK



SCSI Tape

CAPACITY	MODEL	INTERNAL	EXTERNAL
250MB	5150S	$399	$499
525MB	5525S	$539	$649

backpack

Tape Drive

Parallel Port 250MB External Tape Backup

- ▶ QIC 80 uses 2120 tapes
- ▶ Software for unattended backups
- ▶ Twice as fast as internal floppy drive
- ▶ Window and DOS Software Included
- ▶ 2 Year Warranty

$339

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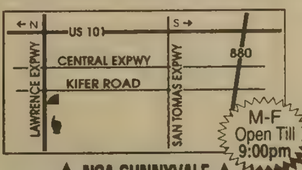

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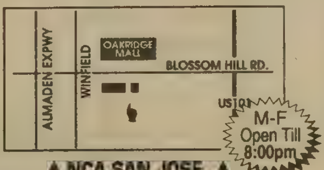

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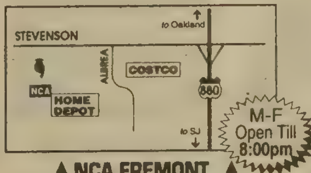

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Mountain.

SUMMIT EXPRESS™SE250

250MB 3.5" MINI-CARTRIDGE INTERNAL TAPE BACKUP SYSTEM

SUPER FEATURES:
- 3.5MB per minute w/comp.
- Uses DC-2120 tapes
- Easy installation & use
- 100% QIC 80 compatible
- System & Network compatible
- Includes Filesafe First software

$149

SUMMIT EXPRESS™SE305

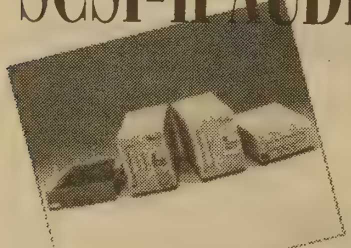
305MB 3.5" MINI-CARTRIDGE INTERNAL TAPE BACKUP SYSTEM

NEW!

SUPER FEATURES:
- 10MB per minute w/comp.
- Uses DC-2120 tapes
- Easy installation & use
- 100% QIC 80 compatible
- System & Network compatible
- Includes SummitSafe software

$199

FILESAFE 1200 PLUS DIGITAL SCSI-II AUDIO TAPE SUBSYSTEM



4mm DAT Tape Backup

SUPER FEATURES:
- 10MB per minute w/comp.
- Includes SCSI interface, DAT cartridge, cables & more...
- Quick file access
- Advanced error control
- System & Network compatible
- Includes FileSafe software

INTERNAL

$1359

EXTERNAL........$1499

FS-TD-250 FILESAFE FIRST FOR WINDOWS....$199

QUICKTAPE 250

250MB EXTERNAL PARALLEL PORT TAPE BACKUP

NEW!

Perfect for notebooks & portables!

SUPER FEATURES:
- 4.2MB/MIN.W/O COMPRESSION
- 8.4MB/MIN W/ COMPRESSION
- USES DC2120 TAPES
- 100% QIC 80 COMPATIBLE
- INCLUDES DOS SOFTWARE

INCLUDES WINDOWS SOFTWARE!

ALL THIS FOR ONLY...

$269

ALTHERNET

SMALL OFFICE LAN SOLUTION

Includes everything you need to connect 2 systems together for file & printer sharing!

AltherLink
L.C.I.

- Althernet LCI 2000 series unit
- 3 10ft. parallel printer
- AltherLink Windows for Workgroups
- AltherNet DOS bonus disk

$99

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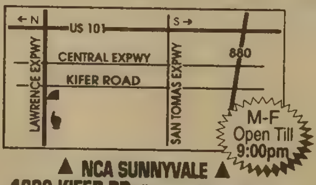

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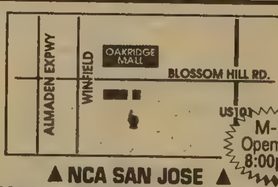

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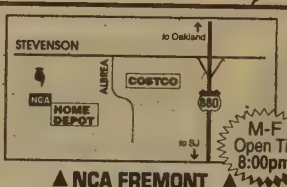

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REMOVABLES

MORE

OPTICALS

HEWLETT PACKARD

1.3GB Multifunction Rewritable & WORM Drive

- ▶ HP C1716T
- ▶ SCSI-2 1.3GB

INTERNAL **$2399**

EXTERNAL C2550 WITH CARTRIDGE **$2799**

1.3GB Cartridge..........................$129

RICOH

128MBYTE, 3.5" SCSI-II REWRITABLE OPTICAL

- ▶ 3000 RPM
- ▶ 256K Cache
- ▶ Approx. 40ms

INTERNAL **$719**

EXTERNAL WITH CARTRIDGE **$889**

Multifunction Magento-Optical Disk Drive for 1-Gbyte and 650-Mbyte Rewritable and WORM Disk Cartridges, With up to 4-Mbytes Read/Write cache

Maxoptix™

1GB CART. glass/poly $195

- ▶ Unlimited Data Storage
- ▶ External SCSI Subsystem
- ▶ One Year Factory Warranty
- ▶ 25-Year Life Of Glass Media
- ▶ Embedded SCSI/SCSI-2
- ▶ Data Transfer of up to 13.2Mbits/Sec.
- ▶ Ultimate Back-up For NOVELL (Ready-to-boot Backup)

TAHITI IIIM - Multifunction

- ▶ 1MB Read/Wirte Cache
- ▶ 1.3GB Optical

$2099

External Optical/1MB Cache....$2299

TAHITI IIIM - Multifunction

- ▶ 4MB Read/Wirte Cache
- ▶ 1.3GB Optical

$2119

External Optical/4MB Cache....$2275

FUJITSU

NEW!

230MB REWRITABLE, REMOVABLE OPTICAL SCSI DRIVES

EXTERNAL SCSI 230MB, 3.5" REWRITABLE OPTICAL

- ▶ External Optical Drive
- ▶ Using 2512 Internal
- ▶ Includes 1 Cartridge
- ▶ Fast Seek Time
- ▶ 3600RPM
- ▶ 256K Cache
- ▶ Software for MAC (free upon request)

$859

INTERNAL 230MB, 3.5" REWRITABLE OPTICAL

- ▶ Bare Optical Drive
- ▶ 2512
- ▶ Low Profile, Only 1"
- ▶ 3600RPM
- ▶ 256K Cache
- ▶ Fast Seek Time

$799

NEW!

REMOVABLES

SyQuest

270MB SYQUEST REMOVABLE

External SCSI Drive

- •External 270MB 3.5" SCSI Removable Cartridge Drive
- •Unlimited Storage Capacity
- •270MB External Drive
- •Cables & Software for MAC
- •13.5ms Seek Time
- •Includes one cartridge

$539

Internal Bare Drive $369

200MB SYQUEST REMOVABLE

External 200MB Drive

NEW!

- • 200MB Cartridge
- • Cables
- • Installation Software (for MAC)
- • PC Software Included With Controller Purchase

$649

Internal Bare Drive $399

44MB SYQUEST REMOVABLE

External 44MB Drive

- • 44MB Cartridge
- • Cables
- • Installation Software (for MAC)
- • PC Software Included With Controller Purchase

$369

Internal Bare Drive $239

88MB C SYQUEST REMOVABLE

External 88MB C Drive

- • 88MB Cartridge
- • Cables
- • Reads & Write Both 44 & 88 MB
- • Installation Software (for MAC)
- • PC Software Included With Controller Purchase

$459

Internal Bare Drive $279

105MB 3.5" SYQUEST REMOVABLE

External SCSI 105MB Drive

- • 14ms Seek Time
- • 105MB Cartridge
- • Cables
- • Installation Software (for MAC)
- • PC Software Included With Controller Purchase

$429

Internal SCSI Bare Drive $279

Internal IDE Bare Drive $239

CAPACITY	SINGLE	5-PACK
44MB Cartridge (5.25")	$59	$295
88MB Cartridge (5.25")	$89	$439
105MB Cartridge (3.5")	$57	$279
200MB Cartridge (5.25")	$97	$460
270MB Cartridge (3.5")	$85	$410

TEAC

1.44MB 3.5" With bracket add $6	$37
1.2MB 5.25"	$47
1.2/1.44MB Dual Drive	$99

FLOPTICALS

IOMEGA®

floptical®

21MB Floptical Drive

MAC Version

INCLUDES:

- •External 3.5" 21MB Floptical
- •One Floptical Media
- •Cables , Software for MAC

$399

21MB MEDIA BY IOMEGA LASER ETCHED

SINGLE ......$19.99 5-PACK......$89.99

PC Version

INCLUDES:

IOMEGA 21MB 3.5" Floptical
One Floptical Media
Host adapter SCSI 8-bit
Cables , Software for PC

INTERNAL **$369**

EXTERNAL **$429**

21MB MEDIA BY IOMEGA LASER ETCHED

SINGLE ......$19.99 5-PACK......$89.99

BERNOULLI

150MB EXTERNAL PC TRANSPORTABLE

- •Cables
- •One 150MB Cartridge

$539

90MB BERNOULLI REMOVABLE
PC VERSION $339
MAC Transportable $339

BERNOULLI CARTRIDGES	SINGLE	3-PACK
65MB	$59	$169
90MB	$109	$309
105MB	$99	$269
150MB	$109	$309

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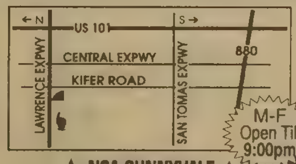

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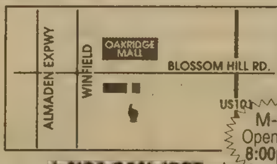

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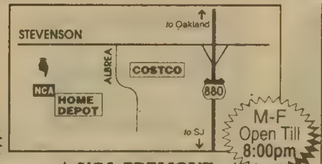

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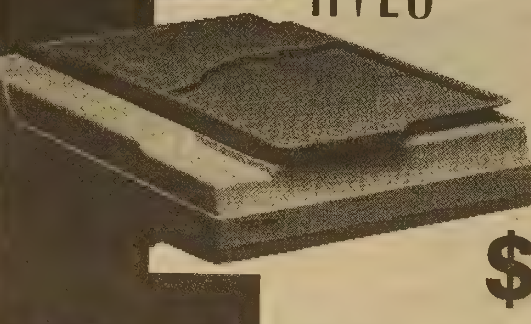
QUALITY BRAND NAME PRODUCTS

RELISYS

High-Quality Scanning!
Scanning with Spectacular Color, Crisp Resolution, PinPoint Accuracy, and an Affordable Price

AVÉC *Colour* 2400



2400DPI
FLATBED COLOR SCANNER
FOR PC or MAC

$529

ColdScan?

ColdScan is a revolutionary new concept in scanning technology that allows the avec and Relisys' optical system to be completely [illegible].

The result...

- •Dust-Free & particles sealed unit... for crisp razor sharp scans
- •No warm-up time... start scanning the moment you turn your scanner on
- •Silent Operation... no noise from cooling fans
- •Reliable long lasting operation... up to 35,000 hours of scanning usage.

AVÉC Colour 2400

- Flatbed desktop, 3-Pass scanner
- High Resolution up to 2400 dpi (Interpolation)
- 600X300dpi (Optical)
- 16.8 Million Colors & 256 grayscale levels
- New Cold-scan technology
- Maximum Scanning area 8.5" X 14"
- Lamp life expectancy up to 35,000 hours
- SCSI-2 Interface for Windows and Macintosh environments
- Twain compatible
- Optional 50-page Auto Document Feeder (RELI ADF30)
- One-year Warranty and HOT-LINE Technical Support.

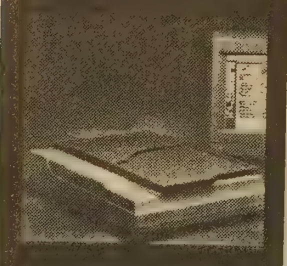
Software Included with the Relisys Scanner:

Flatbed Color Scanner for PC
- Caere's OmniScan™
- TWAIN Driver
- SCSI Cable & Terminator
- Standard Power Cord

Flatbed Color Scanner for Mac
- Adobe Photoshop™ LE
- Art-Scan professional scanning software
- SCSI cable & terminator
- Standard Power cord

Optional Document Feeder....$399

The Reli 4816(T) One Pass Color Scanner



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- High Resolution up to 4800 dpi by interpolation (True 1600 X 400)
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- Cold-scan technology
- Maximum Scanning area 8.5" X 14"
- Lamp life expectancy up to 35,000 hours
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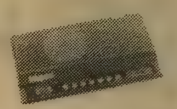
HIGH SPEED FAX/MODEMS



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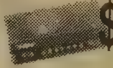

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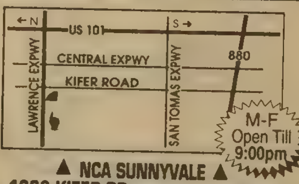

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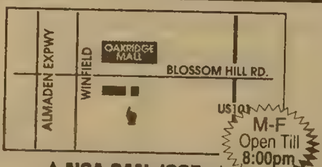

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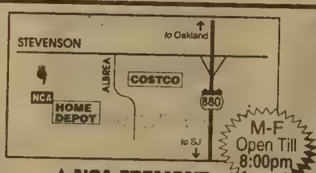

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Software Included:
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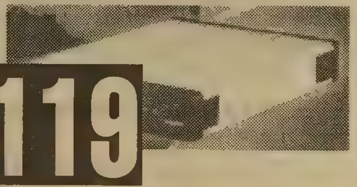

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Cables & Manuals

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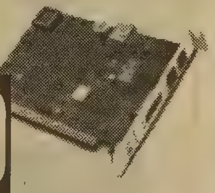

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  °Information Manger™, °ARA Scripts • Manuals

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Smart Connect 14.4

14,400bps Fax/Modem

with Software
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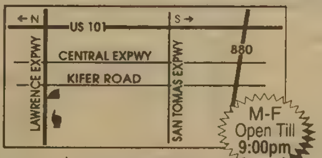

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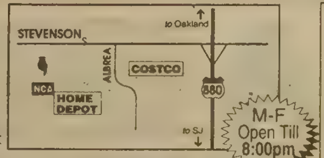

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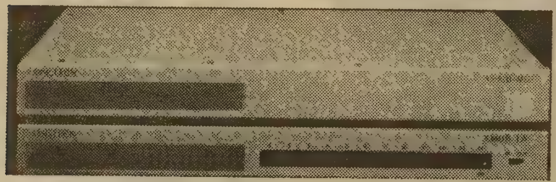
ETHERNET CONCENTRATORS



8 PORT 10BASE-T CONCENTRATOR

Simply the lowest priced 8 port concentrator for twisted pair (10Base-T) wiring. Each port has a diagnostic LED which indicates link integrity and data send/receive. A bnc port lets you cascade hubs, or connect to your existing thin wire network.
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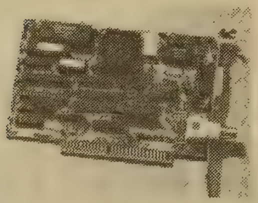

VESA LOCAL BUS ETHERNET COMBO CARD

Both hardware & software configurable, 32-bit high speed data transfers, 3 connectors: 10Base-T, AUI & BNC for any cable type. Supports Novell ODI, LAN Manager, Lantastic, TCP/IP, Windows for workgroups, Banyan Vines & 3Com 3+ Open.

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The Xi-321TA emulates the NE-2000 as a 16-bit ISA Ethernet card. Configure the card via software. Twisted-pair ready. Comes with FREE Novell Boot ROM, diagnostic disk & drivers for Novell, LAN Manager, NDIS, TCP/IP, & Windows for workgroups.

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PCI ETHERNET COMBO CARD

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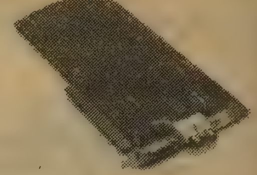

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NOVELL	**single**	**5-Pack**
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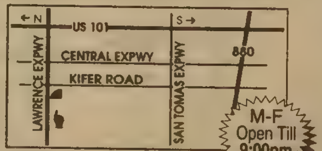

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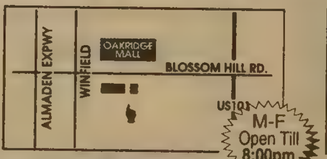

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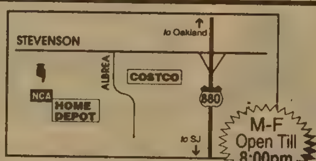

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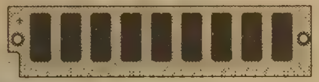

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1MBX9	60ns	9Chip	$Call
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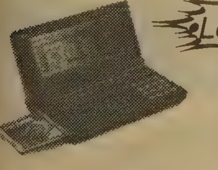

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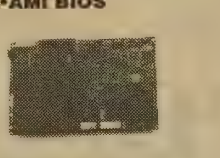

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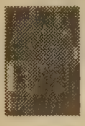

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7 EISA/3 PCI slots, 256K Cache upto 512KB,
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ZIF Socket, Intel Chipset, Full Size Board
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- Four 16bit ISA Slots
- Intel PCI 486 Saturn Chipset
- 256K Cache (up to 512K)
- **Integrated NCR 53C810 32 bit PCI SCSI Controller**
- Memory Upto 128MB
- ZIF Socket for future upgrade
- Integrated Hi-Speed Serial Ports/1Parl.

$269
NO CPU

NCA's High Quality Pentium PCI
90MHz Pentium PCI-90 Super Motherboard

Incredible deal!

- 256K Cache
- Uses 72-Pin SIMMS
- High Speed 16550 Serial Port
- PCI & ISA IDE Builtpin
- 3-PCI Slots
- Built-in Floppy Support
- Intel Chip Set & Board
- Made in Ireland
- CPU Cooling Fan...$29

$389

CPU Sold seperately

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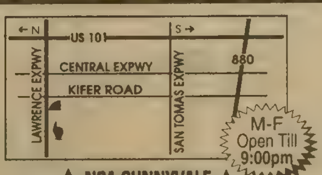

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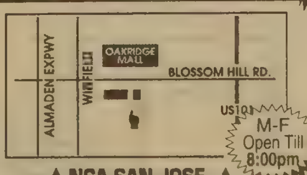

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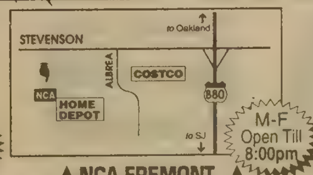

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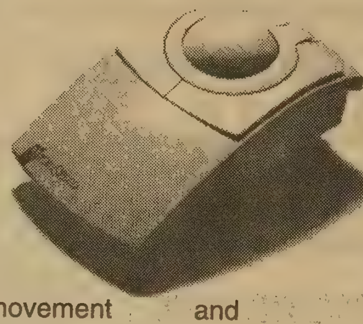
POINTING DEVICES

MORE

MICROSPEED



- 100% Microsoft mouse compatible
- Includes PrecisionPointer™ driver software that automatically adjusts resolution from 50 to 1000 dpi for quick movement and precise control.

PC-TRAC

TRACKBALL

Serial Version	$58.99
Bus Version	$99.99
PS/2 Mouse Port Comp.	$79.99

MicroTRAC

TRACKBALL

Serial/PS/2 Version	$57.99
Macintosh Version	$65.99

MacTRAC 2.0

TRACKBALL

ALL MACS	$69.99

WinTRAC

TRACKBALL

Serial Programmable for WIN	$79.99

MICROSPEED MOUSE DELUXE

Serial version with mousepad & Software

$29.99

MICROSPEED REPLACEMENT MOUSE $19.99

3-Button Serial Mouse (250dpi)

MOUSE SYSTEMS®

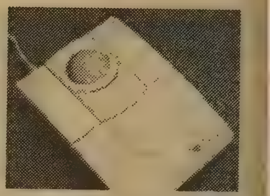
MOUSE!

- 2-Button Serial
- High Resolution 350dpi
- Ergonomic Design
- Buttons re-assignable for left or right handed
- Ultra-Res ballistic acceleration
- Includes mouse pad
- Designer pop-up menus

$17.99

PC TRACKBALL II

- 3-Button Trackball
- High Resolution 680dpr
- Ergonomic Design
- Buttons re-assignable for left or right handed
- Ultra-Res ballistic acceleration



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PAGEBRUSH/TrueColor

- Scans at up to 800dpi in 16.7 million colors
- TWAIN compliant
- Photo CD format supported
- Real-time brightness control
- Supports TIFF, TGA, BMP, EPS, PCX ,GIF & JPEG
- Stitching allows you to scan large images
- Includes SmartPage OCR & PhotoFinish software

NEW!

$199.99

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- Scans at 100-400 dpi
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- Separate Gamma, Brightness, Hue, & Saturation controls
- Special effects: Averaging, Blur, sharpen, Mosaic & More...
- Supports TIFF, TGA, BMP, EPS, PCX & GIF
- Stitching allows you to scan large images
- Includes GO-CR software

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COBRA JOYSTICK

- Auto centering
- X & Y trim adjustments
- 8 Directional control
- Ultra-sensative buttons

$9.99

ALTES 2-button afforable mouse.............................. $9.99

MACPOINT one-button 350dpi MAC mouse with pad......... $29.99

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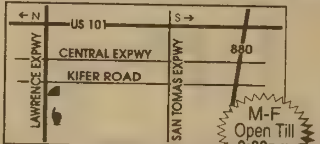

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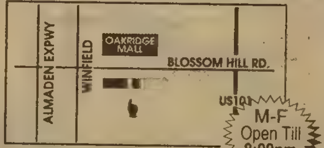

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NCA Introduces Our New Wireless Communications Division

GET UP TO 1000 FREE MINUTES**

MOTOROLA

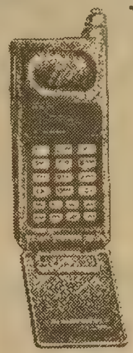
DPC-550

- Lightweight 12.1
- 75 minutes talk time
- 30 number memory
- Automatic redial
- Flip answer and end
- Call timer

$158.95*

*** With purchance of starter kit at $89.95 & after $25 instant activation rebate**

MOTOROLA



Ultra Lite

- 5.9 ounces with battery!
- Optional VibraCall operation
- Battery meter
- Noise cancelling microphone
- One touch emergency dialing
- Signal strength meter

$585.95*

*** With purchace of car adapter at $39.95 & after $25 instant activation rebate**

MOTOROLA

Attache

- FULL 3 WATTS OF POWER
- 70 minutes talk time
- 102 memory locations
- Incoming call screening
- Flip answer and end
- Call timer

$195*

*** After $25 instant activation rebate**

UNIDEN

4600

- 99 # Alphanumeric memory
- Speed dialing
- Auto redial
- 1 year warranty
- Memory lock
- Battery level meter
- Signal strength meter

$129.95*

*** After $25 instant activation rebate & purchase of car adapter at $29.99.**

MOTOROLA

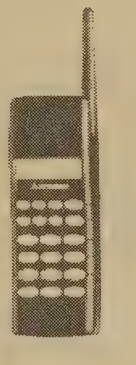
DPC-950

- Only 8.7 ounces
- 9 Turbo dial locations
- 30 memory locations
- Last number redial
- Battery provides 100 minutes of talk time
- Signal/volume meter

$298*

After $25 instant activation rebate

MITUSBISHI



3500

- Only 7.9 ounces
- 20 number memory
- 3 year warranty
- Battery level meter
- Signal strength meter
- Any key answer
- Call timer

$158.95*

*** After $25 instant activation rebate & purchase of car adapter at $59.99.**

10% off ALL *MOTOROLA* ACCESSORIES IN STOCK!

MOTOROLA

BRAVO EXPRESS

- Small pocket size
- Musical alert
- Bright colored housings
- 12/24 hour timekeeping
- Automatic pager on/off
- Vibrate
- Message timestamping
- Message slot number
- Memory storage when off
- Front mount display

$88 BRAND NEW!

MOTOROLA

MEMO EXPRESS

- **Alpha Numeric**
- Small pocket size
- Musical alert
- 12/24 hour timekeeping
- Automatic pager on/off
- Message timestamping
- Message slot number
- Memory storage when off
- Front mount display

$115 BRAND NEW!

MOTOROLA

BRAVO PLUS

- Small pocket size
- Vibrate
- Message timestamping
- Message slot number
- Low battery indicator
- Backlighted display
- Freeze screen

$74 BRAND NEW!

NEC

SPORT PAGER

- Small pocket size
- Vibrate
- Message timestamping
- Clock
- Low battery indicator
- Various alert options
- Duplicate message indicator

AIRTOUCH™ Paging
The new name for PacTel

$45 BRAND NEW!

Authorized Sales Representative

GTE Mobilnet®

More Than Cellular Phones, Cellular Service.℠

Service activation not required, no dealers or resellers. Bay area end users only. * Price includes $25 instant activation rebate with new GTE MobileNet activation on selected rate plans. Some restrictions may apply.
* Up to 1000 minutes of local calling airtime free over your first two months billing statements, unused airtime will not be credited and is not transferable. For a limited time on new activations with selected plans. Some restrictions may apply. Offer valid from 8/29/94 to 10/8/94.

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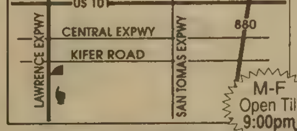

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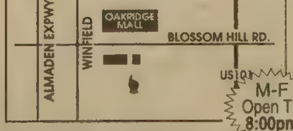

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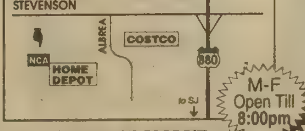

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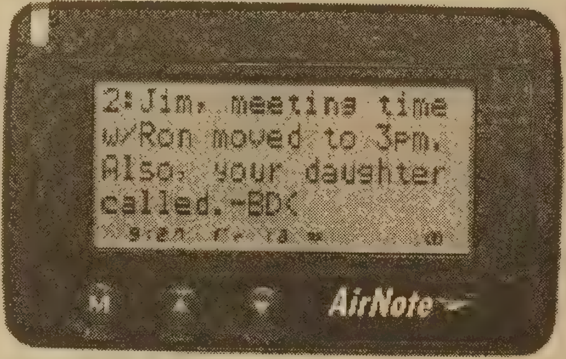
Includes Software for Mac & PC

AirNote



Too busy to call in for your messages? No phone? Here's how your messages find you.

Everything you need to send and receive wireless messages from:

- A personal computer
- Any telephone
- Any e-mail system with access to Internet

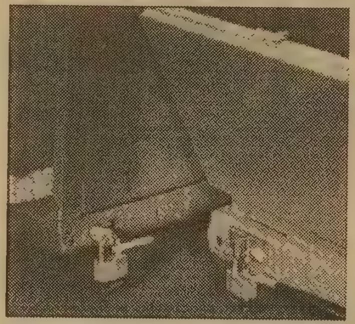
ALL IN ONE PACKAGE!

Comes complete with:
- AirNote Software for your personal computer
- Wireless network activation and service options including free news subscription
- NEC FACTS PROVIDER Alphanumeric Pager
    - Simple 3 button operation
    - 40 memory slots
    - 5,750 character memory
    - Large 80 character display (4 rows of 20 characters)
    - Automatic back-lighted screen
    - Weight 3.3 os. with battery
    - Nominal battery life: 650 hrs. (Approx. 4 weeks)
- Horizontal belt holster clip for pager
- One AAA battery
- Complete documentation
- Lifetime warranty with network subscription

$339

Activation & Service are not included in price.

Qualtec
Data Products, Inc.



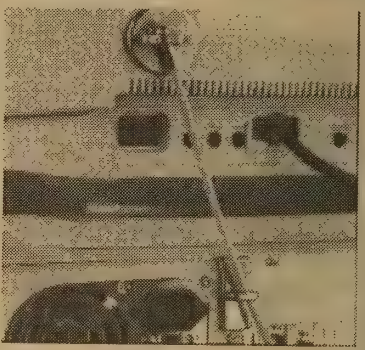
$34.95

NOTEBOOK-KIT

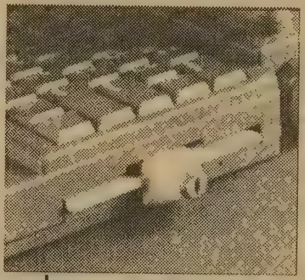
NOTEBOOK-KIT is the most complete theft deterrent available for all "mobile" computers. The NOTEBOOK-KIT utilizes the small security retention socket built into many computers. A "Super Bonding" plate is provided to secure notebooks that do not have the built in feature. Kit includes: 1 micro-clip, 1 rectangular plate, 1 round plate, 5ft. cable, keyed lock and a carrying pouch.

LOK-KIT II

LOK-KIT II's small profile and superior strength make it the most versatile and innovative theft-deterrent security device available. The kit features cast metal plates with vinyl surfaces that are attached to your PC, or any other business machine, with Qualtec's "Super Bonding System". Simply install the plates on the selected machine and weave the cable through. Attach the lock and relax. Kit includes 2 round plates, 1 rectangular plate, 5 ft. cable and a keyed lock.



$29.95



$19.95

FILE-LOK II

FILE-LOK II is the perfect data security solution for all PCs and MACs with 3.5" floppy drives. This product is inserted and locked in the drive preventing the downloading of all your customers' valuable information. FILE-LOK II works on notebooks and Powerbooks as well as desktop systems.

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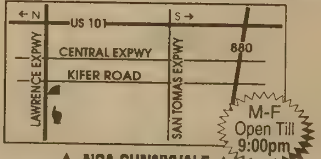

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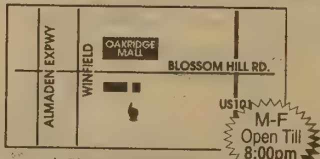

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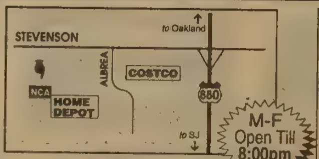

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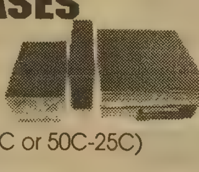
ACCESSORIES

MORE

CASES

EXTERNAL SCSI DRIVE CASES



- ▶ High Quality Metal Cases
- ▶ 2 Centronics Output
- ▶ Noise-Free Fan
- ▶ External SCSI ID Switch
- ▶ External SCSI Cable (50C-50C or 50C-25C)
- ▶ Power Cable & Hardware

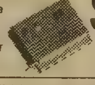
For 3.5" or 5.25" Half Height	**$99**
For Full Height or 2 HH (NCA)	**$199**
For 2 Full Height 200W with 5-fans	**$279**
For 4 Full Height With Panel	**$499**

SCSI *Vue*™ NEW! by GRANITE D•I•G•I•T•A•L

Active Diagnostic

Terminator

- • Improves SCSI Performance
- • Analyzes Signal Quality
- • Termination Power Indicator
- • Diagnoses Problems



$49

POWER SUPPLIES

250Watt UL approved AT	$49
250Watt UL for Tower	$49
400Watt UL for Tower	$179

American Power Conversion

UNINTERRUPTED POWER SUPPLIES

DESCRIPTION	PRICE
BK250VA	$109
BK400VA	$169
BK450VA	$199
BK600VA	$279
BK900VA	$399
BK1250VA	$519

TRIPP LITE EST 1922

"THE POWER PEOPLE"

MADE IN THE USA

DESCRIPTION	PRICE
250VA (BC-250) UNINTERRUPTED POWER SUPPLY	$99
STRIKER FILTERED SPIKE STRIKER, 6-OUTLET SURGE SUPPRESSOR	$8.99
SPIKE STIK AC SPIKE & LINE SUPPRESSOR	$12.99
SPIKE BAR SUPER 7 7-OUTLET AC SURGE W/NOISE FILTER & DIAGONTIC CIRUITRY	$15.99
SPIKE BAR (SK 6-6) 6-OUTLET PREMIUM SURGE SUPPRESSOR	$22.99
TERMINATOR TR6 SURGE SUPPRESSOR 13,000 amp protection	$28.99
ISOBAR4 ULTRA PREMIUM SURGE SUPPRESSOR W/ CIRCUIT DIAGNOTICS	$43.99
ISOBAR6 6-OUTLET PREMIUM SURGE SUPPRESSOR	$47.99
POWER MISER AUTOMATIC MONITOR SHUTDOWN TIMER & SURGE SUPPRESSOR	$49.99

6-OUTLET BASIC POWER STRIP PLASTIC

$4.99

COMPUTER CASES

- ▶ HIGH QUALITY CASES
- ▶ UL APPROVED POWER SUPPLY
- ▶ GREAT STYLE SELECTION

DESCRIPTION		PRICE
CF-9404SD	Desktop 230W	$59
CF-9308SD	Slim line 230W	$69
CF-9303SD	Mini Tower 230W	$49
CF-9402SD	Mid-Mini 230W	$59
CF-9302SD	Mid-Tower 230W	$79
CF-9401SD	Full Tower 250W	$99

CABLES

HARD DRIVE EXTERNAL CABLES

COME SEE OUR LARGE SELECTION OF HIGH QUALITY EXTERNAL CABLES AT THE LOWEST PRICES!

HARD DRIVE INTERNAL CABLES

DESCRIPTION	PRICE
SCSI 50-PIN RIBBON 3 CONNECTOR 2 devices	$5.99
SCSI 50-PIN RIBBON 4 CONNECTOR 3 devices	$9.99
SCSI 50-PIN RIBBON 5 CONNECTOR 4 devices	$12.99
SCSI 50-PIN RIBBON 8 CONNECTOR 7 devices	$22.99
IDE 40-PIN RIBBON 3 CONNECTORS	$3.99
FLOPPY & IDE CABLE SET	$5.99

POINTING DEVICES

LOGITECH

DESCRIPTION	PRICE
TrackMan Voyager	$59.99
TrackMan	$59.99
TrackMan Portable	$89.99
MouseMan Cordless	$89.99
MouseMan serial	$52.99
MouseMan bus version	$63.99
First Mouse	$26.99
MovieMan	$249.00
ScanMan Power Page	$469.00
ScanMan 256	$199.00
ScanMan Easy Touch	$209.00
ScanMan 32	$109.00
ScanMan Color	$399.00

Microsoft

NAME	PRICE
Microsoft Mouse II OEM Serial version	$49
Microsoft Mouse II OEM Bus version	$69

MICROSPEED

NAME	PRICE
PC-TRAC serial/bus/PS/2	$58.99/99.99/79.99
MacTRAC 2.0 SE & Mac II	$69.99
WinTRAC serial for Windows	$79.99
MicroTRAC serial, PS/2/MAC	$57.99/65.99

MOUSE SYSTEMS

SEE PAGE 30

PoinTex

NAME	PRICE
MAC 2-BUTTON MOUSE ADB PORT	$24.99
MAC ACTION MOUSE WITH SOFTWARE & MOUSEPAD	$59.99

QuickShot by Bondwell

WARRIOR 5 PLUS	**$9.99**
RAIDER 5 JOYSTICK	**$15.99**
Sound Beat QS-820 Speakers	**$12.99**
WARRIOR 5 Deluxe Analog Joystick for PC	**$9.99**
Smart Game Card 2-Game ports Selectable Speed	**$16.99**
Star Fighter 5 Control Center	**$9.99**
Sound Mate II Amplified Speakers	**$19.99**
Game PC CARD PCMCIA NOTEBOOK CARD	**$59.00**
SOUND FORCE 15Watt Multimedia speakers	**$49.00**

MEDIA

DESCRIPTION	SINGLE	5-PACK
2120 (120/250MB)		
SONY QD2120 120/250MB	14.99	65.00
SONY QD2120 120/250MB Q80	17.99	80.00
3M 2120F FORMATTED XMAT	18.00	89.00
MAXELL DC2120 UNFORMATTED	16.99	79.00
MAXELL DC2120 FORMATTED Q80	18.99	89.99
6000(1/4" TAPES)		
SONY QD6150 150MB	$19.95	$90.00
SONY QD6250 250MB	$19.99	$90.00
SONY QD6525 525MB	$26.99	$125.00
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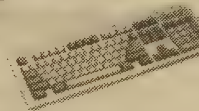

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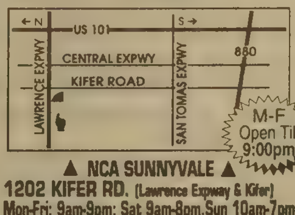

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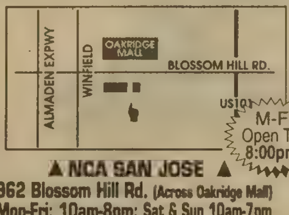

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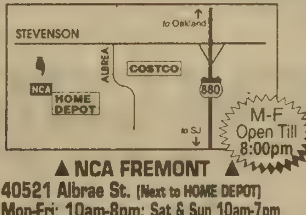

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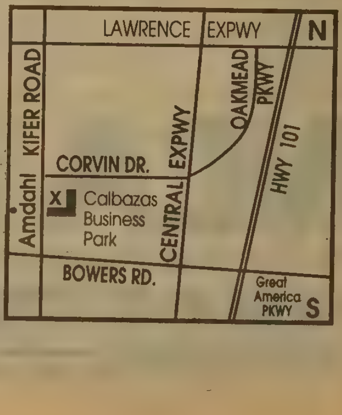
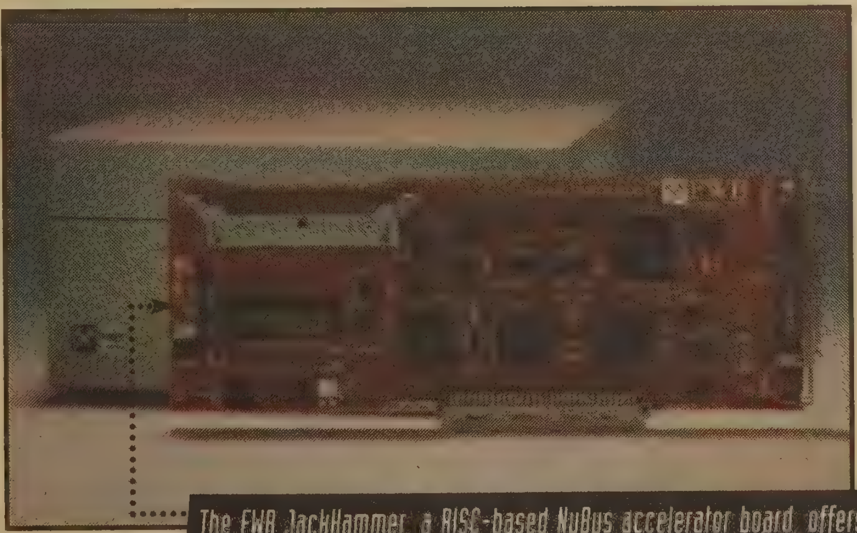


RAIDing Memory For Multimedia

Huge Files, Fast Access

Multimedia developers who must work with very large graphic, sound, and video files use storage that is measured not in megabytes, but gigabytes (GB)—one billion bytes. One GB equals 1000MB. For example, Terry Schussler of Gray Matter Design in San Francisco is a developer consultant who has worked on twenty CD-ROM titles in the last year. He put a Seagate Barracuda 2.1GB drive in his Macintosh Quadra 840AV.



The FWB JackHammer, a RISC-based NuBus accelerator board, offers as much as a 700% improvement over the data bottleneck of the Mac's native SCSI ports.

In mastering a CD-ROM, which can reach as high as 650MB, developers need to be able to have room available to assemble all the parts in one place, along with the ancillary codes, drivers, and other tools and files that will go into the CD-ROM configuration before it is ready to be burned in as a duplication master. If you're a digital video producer and are assembling a twenty-minute title, in no time at all you will have Woodstock-on-a-disk. The rule of thumb in buying Big Memory is that you should expect to pay about a buck a megabyte, so that a two-gig drive will set you back something over two grand.

But storage space is only the first concern in multimedia file handling. Data access speed becomes equally important, especially in video. With large graphic files like 3-D models, the drives and processors can chug along, hour after hour through the night, rendering away with all of those polygons getting filled and shaded. When the disc becomes loaded with files, it will slow down even more.

Video data is different from other kinds of data. Video is composed of smaller digital packets that need to move very fast in order to keep up with a speed of 30 frames per second, the data stream rate for video that will transfer, master, and display without flickering or revealing artifacts.

The RAID (Redundant Array of Inexpensive Drives) configuration, an alternative to SLED (Single Large Expensive Drive) high-performance drives, is the storage/transfer solution currently being used by more high-end color prepress, multimedia, and desktop video producers. This is a high-capacity, high-performance storage method with the added benefit of backup data protection. In fact, many RAIDs are in place for security purposes and file

BY TONY REVEAUX

servers. Micropolis makes 9GB drives dedicated to video-on-demand services.

RAID disks dance to the same tune (7200rpm) with spindle synchronization. This ensures that each platter of each drive will be in precisely the same position relative to the other drives, so that the head on drive B will be over the appropriate sector of its platter just as drive A finishes reading to or writing from the appropriate sector on its platter. This reduces latency and seek time as well as data loss.

RAIDs operate somewhat like parallel processing. RAID systems can be configured in six levels, from level zero to level five, in degrees of mirroring data over storage. Level zero has maximum storage and minimal security, level five is dedicated to mirroring and data backup. Because of the precision and programming needed to keep a RAID together, the "inexpensive" is relative.

FWB SledgeHammers, among the most widely favored by producers, can average about $9000.

I'm using a 2.041GB FWB SledgeHammer in a Centris 650 with the PowerPC upgrade. This is a two-headed parallel design, where data is read and written by two sets of disk drive actuators and heads operating in tandem. This allows both actuator and head sets to transfer data simultaneously, with high data transfer rates of up to 15.9MB/sec. Up to now, they weren't all compatible with the Apple NuBus interface, but the FWB JackHammer, a RISC-based NuBus accelerator board, completes the Macintosh system, with as much as a 700% improvement over the data bottleneck of native SCSI ports.

NEXT EXIT FOR RAID

Dana Atchley is a Bay Area pioneer media artist; his D3TV Next Exit autobiographical road show has been charming audiences for years as its underlying technology has evolved from magic lanterns to multimedia. With Joe Lambert and Life on the Water theater, he has been providing classes in personal appropriations of the new media. Next Exit is now being driven with an FWB SledgeHammer 4GB RAID drive and a JackHammer accelerator board on a Macintosh Quadra 800.

"I'm not pushing the limits of RAID as much as I'd like to," says Atchley, "except for certain parts of my show. The RAIDs are very robust, and the ability to have continuous throughput without any drop frames is pretty critical. I do mostly data rates that are about 2MB/sec for 16-bit mono sound, using half-screen playback. A lot of the people who are using RAIDs really want the 640 x 480 high resolution and huge data rates such as for broadcast applications.

> The RAID [Redundant Array of Inexpensive Drives] configuration, an alternative to SLED [Single Large Expensive Drive] high-performance drives, is the storage/transfer solution currently being used by more high-end color prepress, multimedia, and desktop video producers.

"With the Radius VideoVision Studio board, which is a critical part of the equation, using MacroMedia Director 4.0 and still using QuickTime 1.6 [the Radius rev for 2.0 was not yet out], I'm getting really remarkable playback. The speed of the drives is important, but I'm giving it a lot of headroom. In fact, these drives are capable of 3–4MB/sec. The times that I use that higher data rate are the few places in my show where I do full-screen video, and mostly I'm using that for transitions effects.

"When I'm doing transitions from one Director movie to another, I grab the first frame of the Director movie and put that into my Adobe Premiere 4.0 document. It's so smooth you can't see when I go from Director to full-motion video. And then the last frame of my Premiere QuickTime clip is the first frame of the next Director movie. We use this a lot in our workshops, where we record even lower data rates, like 1MB/sec with 8-bit sound. We've found that at that data rate we can blow up our half-size movies and play them back to videotape, and the stuff looks just great."

The San Francisco Digital Media Center/Life on the Water is located in the Sears Building on 3435 Army Street, Suite 222, San Francisco 94110. To receive a brochure on available classes in multimedia call (415)824-9394.

RAID FOR THE REST OF US?

Is RAID drive array technology scalable enough to migrate down to the desktop of the average user? Eventually, though probably first as medium-cost servers for LANs, and in a somewhat different form, long before it's there for a single PC for under $800.

Most of you will find that the data backup security you're already getting by sectoring your hard disk and using backup utility programs that automatically distribute the backup to a storage sector is enough. But for datastream performance, a RAID or near-RAID array is a light-year ahead; if it's digital video files you want to access from storage, this medium can support that.

Other memory and storage technologies, such as magneto-optical and flash card, are continually pushing their envelopes, and may arrive there first for the average user. For a closer look at the inner workings of data storage technologies, Ron White's *How Computers Work* from Ziff-Davis Press's PC Computing series of illustrated books (202 pgs., $22.95) gives an excellent X-ray vision view of the inner workings and logics of all of these whirling and glowing devices.■

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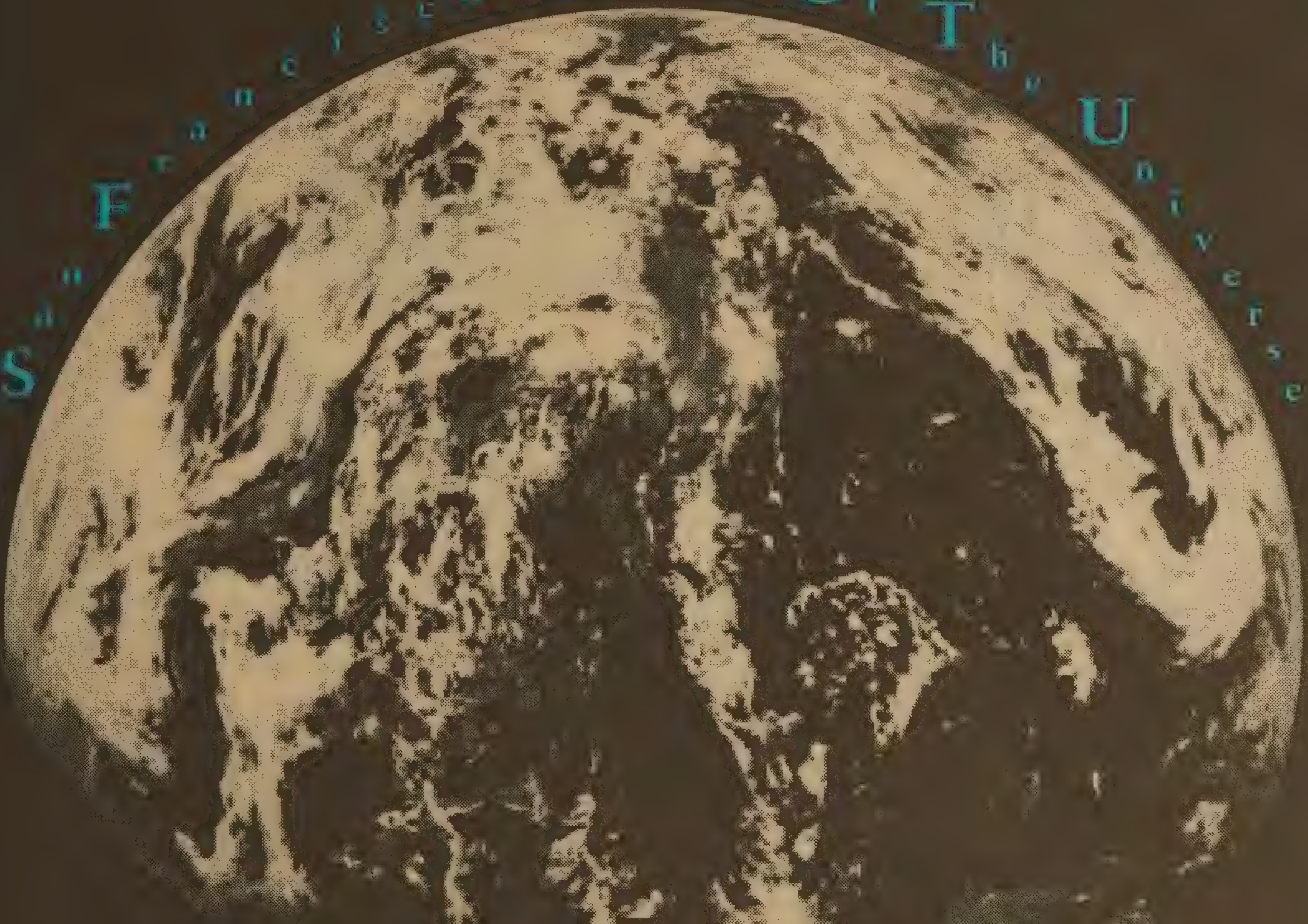

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Multi & Media beyond

MULTIMEDIA 101

Hardware? In Multimedia 101?

In Search of the Perfect Processor, Part 1 of 2

It is the best of times, it is the worst of times...to buy a multimedia-capable computer.

Or, to PowerPC, or not to PowerPC: that is the question.

Attentive readers may have observed that this column has never dealt with any of the questions that surround hardware. I view the various boxes that make interactive multimedia possible as some of the wonders of the modern age—but I also take them for granted; I'm surprised when I find out that there are things they still can't do, at least at an affordable price. The truth is that I'm not a tech-type, my eyes glaze and my mind grows numb when I read long lists of digits interspersed with TLAs and apparently random letters that don't make up English words or sentences. I'm happy enough to grasp the general concepts, and, while I attempt to keep vaguely current with the features available, I freely confess that hardware details just aren't my cup of tea. Multimedia's content, its concepts, and its design are the juice for me.

However, my semi-trusty old SE recently became untrusty and I am currently having my face rubbed in the realities of hardware purchase. It's not a pretty picture, either for me personally or, by extension, the industry and perhaps even society as a whole.

THE WORLD'S OLDEST DEBATE: MAC VS. DOS

Call me a Mac slut if you wish, but I haven't seriously considered a DOS-based machine. I had fallen prey to the myth that Macs were no longer much more expensive than IBM clones. That in conjunction with my general comfort with Macs and my desire not to have to type G:\FCKYRSLFBLGTES or whatever it is whenever I want to persuade some piece of Windows software to do its job had pretty much set me on the path to a Mac.

After inspecting some of the many advertisements in this very magazine I can no longer subscribe to the myth about the closeness in price; the two breeds may not be as far apart as they once were, but obviously I could buy a clone for perhaps two-thirds of what a Mac will set me back.

Other reasons for the supremacy of Macs in my mind include the admittedly anecdotal difficulties of

BY JONATHAN E

persuading all the disparate components of clones, particularly the sound cards, to work together—when audience members at the Art Teco conference asked Marc Canter about sound problems, he was typically blunt with "Get a Mac!" It is also generally acknowledged in the graphics and video fields that Macs are far more suited to the demands of creative work.

Beyond this, there are a couple of personal aesthetic reasons for staying with the Cupertino computer: firstly, Windows screens are some of the ugliest things on earth—I can't stand the way the type looks, and typically video is even worse than on a Mac; secondly, the boxes the computers come in are also extraordinarily ugly. Macintoshes could use some improvements of their own, but generally their lines are relatively sleek without the clunky awkward contours that make the clones look like they belong in another decade—or perhaps in another hemisphere, one of the former states of the Soviet Union. It might sound trivial, but one of the ways a computer must function is as a piece of furniture.

> There are all sorts of PREDICTIONS about how everyone will have a computer in the FUTURE, at least everyone who counts, but I'd GUESS that a lot of potential customers will find SOMETHING ELSE to do with their time, energy, and money unless the buying EXPERIENCE becomes more pleasurable and reliable.

PERFORMA TIME

So, having ruled out most of what's available, I set about the absolutely ghastly process of deciding what machine I wanted, what machine I could afford, and finding a place that would sell me such a machine.

The first question everyone says should be answered is, "What are you going to use the machine for?" I'm a free-lance writer, I review music and CD-ROMs, I mess around a little online, I'd like to do more of all these things, and find a way to actually make a living. Thus I do not actually have very great computing needs—a basic home-office package with CD-ROM would in many ways fit my needs. As a reviewer of consumer items, one of my inclinations was to play the role by going the "boombox" route and getting a Performa from Circuit City.

As I write, I could pick up a Performa 575 there for about $1900. It's an all-in-one machine with 5MB RAM, 250 MB hard disk, nice screen, double-speed CD-ROM drive complete with keyboard, modem, and software package. It has stereo speakers, but they're not really adequate. So, tossing in about $180 for Apple speakers (or considerably less for another manufacturer's) and about $300 for a StyleWriter, I could be out of there for under $2400 plus tax. Really not a bad deal, and it may yet be what I do—but now we get to the hard part of comparing apples to apples and figuring out how bananas fit in.

There's a very close alternative at Whole Earth Access, which has the Performa 630 available also for $1900. What are the differences? Here's the frustration—it's impossible to tell exactly what the differences are. No two stores list the specs in the same way, and, to date, I have found no one who really knows what's in all of Apple's various boxes either online, amongst friends, or in any publication. Ask Apple? You must be joking—I'm trying to conduct this search with some degree of efficiency and anonymity, i.e. no calling the publicists. This is undercover computer buying.

The Performa 630 at Whole Earth has two distinct differences from the 575 at Circuit City. It has 3 more MBs of RAM but not such a good monitor. While the spec sheet doesn't admit it, the sound is only 8-bit while Circuit City lists the 575's sound as 16-bit. Then there are fuzzy differences such as the included software and just what fax-modem is included in the box. Consider that Whole Earth also has 630s with a 350MB hard disk and the TV option for about $2400. This is a roughly comparable value assuming that one wants the TV option (and I do, I do!). Are you confused yet? It's my money I'm trying to spend as wisely as possible and you can bet that I'm nearly round the twist already and we've barely started yet!

THE VULGAR WORLD OF COMMERCE

A few words about computer salesmen and stores (and I have yet to run into any computer saleswomen): theirs is a tough job, not dissimilar to what car salesmen have to deal with—lots of tire-kickers, insane product lines with myriad options to be considered, and they work on commission. Unlike the situation at the car dealer though, there are never enough computer salesmen; they're always fielding questions from several customers at once, so it's hard to catch one's attention. In addition, the machines they're trying to sell often don't run (imagine buying a car without driving it!). Occasionally, they appear to have given up and are just basically rude and indifferent to prospective customers; at best, they're harried and distracted. I found this to be the case at both large chains and small boutiques.

An ancillary gripe is that once you've been hooked by a particular salesman, none of the others will talk to you beyond the barest formalities. Even if one is temporarily free by some strange quirk of fate and you ask only a simple question, he'll generally go and fetch "your" salesman rather than answering you directly. It all adds up to an irritating experience and quite a waste of time. I know they're working on thin margins and commission; I know that in many cases they know little beyond what can be gleaned from a spec sheet; I know that shopping is America's national pastime; but going to a computer store feels like participating in an endurance sport. It certainly wouldn't qualify as a thrill sport.

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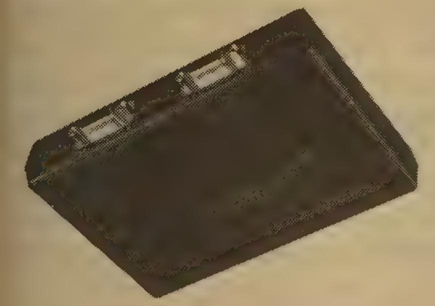

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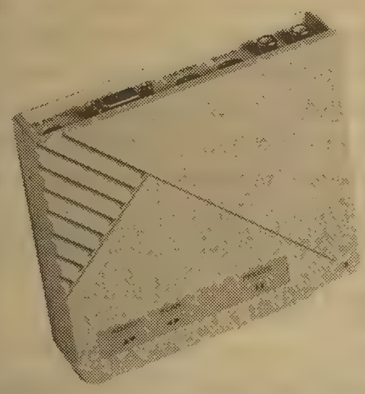

VISION PLUS

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View the difference with **Action TV** and **Vision Plus**. Both are the ideal desktop encoders for converting VGA text, graphics, video and animation into NTSC, S-VHS or PAL signals. View images simultaneously on PC and TV!

Compatible with both PC and Macintosh platforms, **Action TV**allows you to display your computer presentations and games on TV. The external Action TV is a high-quality, portable unit that's easy to install wherever you take it.

Vision Plus takes you a step further by adding a video capture utility that lets you record and playback your computer output to video with professional quality.

VIDEO PHOTOGRAPHER

This popular little unit captures real-time images with 736x560 (NTSC) and 880x695 (PAL) resolutions in nothing but true color!

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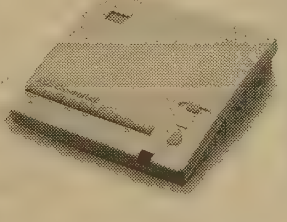

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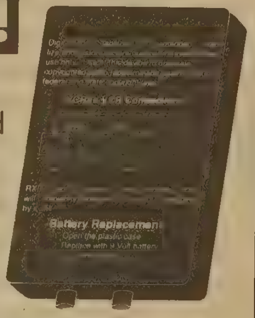

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MultiMedia & beyond

I emphasize this because quite honestly if I didn't really, really, really need a computer for work I would likely have turned around and walked out of the first store I went into and never returned. Occasionally, I still daydream about finding some other occupation where I could blow the whole industry off. There are all sorts of predictions about how everyone will have a computer in the future, at least everyone who counts, but I'd guess that a lot of potential customers will find something else to do with their time, energy, and money unless the buying experience becomes more pleasurable and reliable. As it is now, a customer goes through an ordeal and is then left wondering if they really got the best deal they could.

However, I did get two very good pieces of advice from salesmen—even if just plain financially impractical for me at this time. The first was to buy two computers! Working on commission sure works wonders, doesn't it? The other advice was to look very carefully both at what my future needs might be and the probable course of the future—in other words, buy the biggest, fastest, most adaptable machine possible. Salesmen—I love 'em.

QUADRAS, POWERMACS & THE FUTURE

The frustating thing is that both pieces of advice actually fit the general direction my thoughts are leading me in. The Performas are probably fine little boombox machines—you can add more RAM and they're upgradable to PowerPC—but they only have 68LC040 processors, meaning that they have no FPU. Thus, if I ever want to do more than look at CD-ROMs and write reviews, if I want to really have the multimedia experience and create a little animation, do some sound work, or anything else that requires heavy computational processing, I'll be sitting around waiting for the machine to grind through the work. It seems very likely that I'll want to do that sort of project in the future, not only to entertain and inform you but also on a production basis.

Apple has two product lines with more powerful processors than the 68LC040; the Quadra and the PowerMac series. Apple now only makes two Quadras: the 605, with a 68LC040 processor so that's out of the running, and the 630, which has some intriguing features. In the PowerMac series, everything over the 6100/60 is way out of my price range, so that's easy for me—but, if you've got the budget and have professional requirements, the 7100/66 or the super-duper 8100/80 are without doubt what you should be looking at. All the difficulties of comparing differing amounts of RAM and sizes of hard disk experienced with the Performas are present at the low end of the Quadra versus PowerMac debate where I reside.

Essentially, my numbers came out to be about the same for either machine when I added up all the costs of the most intelligent options I could figure out—somewhere between $2400 and $2700 without a monitor or keyboard but including a CD-ROM drive. Surprisingly, the PowerMac was a little cheaper, but also less adaptable. Every option had a tradeoff in features or capability against the next option.

When I put in all the costs for either system, I got queasy about the total budget—it began to push $4000. I think this is way beyond what the mythical Joe or Jill Sixpack will spend on a computer, but if they don't spend that much they'll really only get a hobbled machine. Not having the monitors up for comparison doesn't make the decision making really any easier, because the process is profoundly complicated by assessing the

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merits of the Quadra's 68040 processor against the PowerMac's 601 RISC processor.

In brief, the PowerMac will be much faster than the Quadra if it's running software designed for it—native applications. If the PowerMac is running software designed for older machines in emulation, it may be slower than the Quadra. Sure, at some time in the future, there'll be tons of native applications for the PowerMac and at the professional level the future is almost now. But I'm intending to review consumer CD-ROMs and it'll be awhile before those are native to PowerMacs, so for now they'll be running under emulation, which isn't very fair.

Using a PowerMac 6100/60 for most of the things I do will be a bit like flying to Sacramento on the Concorde, but ultimately they're cheaper and represent the future. Apple clearly expects to move most of its customers to PowerPC at some time since just about every machine is emblazoned with "Upgradable to PowerPC."

> All the DIFFICULTIES of comparing differing amounts of RAM and sizes of hard disk experienced with the PERFORMAS are present at the low end of the Quadra VERSUS PowerMac DEBATE where I reside.

It's an agonizing situation, and it's not helped by the fact that every time I look in another magazine or consult yet another expert I glean yet another tiny nugget of information that tips the scales in one direction or another. An example is what I just read in *Wired* about Apple using the PCI bus rather than the NuBus standard in its next generation of computers. I barely understand what that means, but it seems that perhaps the current PowerMacs won't be the leaders of the pack for so long. We all know that the price of progress is change, but I also know that I don't want to be stuck with a machine that is immediately outmoded.

Not only have I not come to a decision, but I'm becoming seduced by the charms of the PowerBook 520c and its portability. I've also been advised to look more closely at a used machine and consider third-party boards. I don't know what Mr. Sixpack will do, I wonder how the consumer market for multimedia will ever work out.

As the Terminator said, "I'll back." Next month, we'll have further retail adventures. ■

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MultiMedia & beyond

Gulch Gossip

Scenes From A Virtual Wedding

By Jonathan E.

Was it a media event, a multimedia event, a historical event, a virtual event...or a non-event? "It" was the world's first virtual-reality marriage ceremony held on August 20th either in the CyberMind Virtual Reality Center at the Embarcadero Center or in the lost city of Atlantis, depending on your point of view.

It was certainly a media event, achieving advance coverage on the front page of the *Financial Times* of London above the fold. At the ceremony, there were half a dozen film crews, more still photographers, and writers galore. The press was supposed to be corralled in the back, but **Linda Jacobson** of *Computer Life* gets points for killer instinct by grabbing a seat in the third row. Weddings almost always seem to run late; this one got underway about an hour late, while the stained-glass-like bank of monitors got degaussed and other frantic technical activity went on behind the scenes. At least all the corporate logos were up and running on a good old-fashioned printed banner.

Finally, the ceremony got underway with a brief introduction by **Aimee Rosewall**, wedding coordinator for CyberMind, looking quite stunning in an untraditionally tight black dress. The bride, **Monika Gladys Liston**, wore a somewhat more traditional, but still innovative and definitely futuristic-looking, very tasteful dress, made of a silvery-grey, metallic-sheened fabric, quilted with pearls at the interstices, and with thin shoulder straps. **Hugh Hyuncheol Jo**, the groom, wore a dashing tunic in black and silver with high boots, looking every inch the adventurous cybernaut of the future. The **Reverend Chris Schmal** was comparatively earthbound in a fairly standard blue suit, but he gave a nice address about how we were to meet **Jesus** in a new way.

The ceremony itself moved from Embarcadero Center to Atlantis with the donning of headmounts by the bride and groom as well as the minister. The guests could see a monitor each for Monika's and Hugh's points of view, while the central bank of nine screens showed an overall view. Things started smoothly enough with Monika in a chariot on a classic carousel. The chariot with its two horses leaves the carousel, pulls up to a bridge where Hugh is waiting, and Hugh gets in and drives the chariot off towards the city of Atlantis. These are all elements that Hugh and Monika had particularly wanted in their fantasy Atlantean world.

But, while I hope that in the real world everyone lives happily ever after, I must report that in Atlantis things started to go wrong. Once in the city, the pair descend from the chariot and ascend a flight of steps to the palace. Once inside the palace, nothing happens except that suddenly the bride and groom cannot see each other and cannot move forward towards the altar. Apparently the Reverend Schmal cannot see anything in his headmount either. It takes a while for all this to become obvious, but after a couple of minutes of puzzlement and crazily tilted points of view on the monitors as Monika and Hugh attempt to find each other, it's clear that the program is stuck in place and that the two principal participants are virtually standing on top of one another.

In what must be a sign of a good match, they pluckily and gracefully carry on. A previously overlooked feature of headmounts is that no one can see you blush when things don't go right. I'm not sure what happens when you cry in them.

Kisses at a distance were exchanged in cyberspace, heart-shaped fireworks went off on the screens. The couple removed their headmounts and exchanged rings in the physical world while the heart-shaped fireworks went off again. It was really a very sweet way to spend the afternoon, and my initial cynicism was considerably softened by the obvious delight Monika and Hugh have in each other and the pleasure they got out of the ceremony, even with its snafus.

However, I cannot resist the opportunity to comment a little on those snafus. Firstly, the simple old-fashioned technology of a sound system without feedback, distortion, and interference might be mastered before attempting more difficult feats such as live, virtual-reality ceremonies. Secondly, this was not a genuine real virtual-reality world in that a sequence of events was scripted and Monika and Hugh had no real freedom to wander around in an imaginary world—there was a certain amount of hyping the media going on. Thirdly, as extensive rehearsals had been held and the program had run to completion earlier, the lock-up during the ceremony makes it clear that VR is still a tricky beast—do not enter it without extra RAM at hand.

On the other hand, this was a fairly elaborate production and known to be a stretch; the jokes beforehand included discussion of whether there should be dialog boxes for the bride and groom with yes, no, and cancel choices, and discussion of how to reboot a wedding.

However, if you want to get married somewhere other than here—say, Reno—and don't want to make the drive, CyberMind will entertain serious inquiries for future weddings. Rosewall claims that the cost is comparable to a traditional ceremony. I'd guess you might have to do your own programming—come to think of it, I'd advise you to do your own. I asked her where her ideal ceremony would be. She replied, "I haven't a clue—the beauty is anywhere and the choices are endless."

▼▼▼▼▼

Okay, okay, a few other things are going on. ... My lord and master, er, I mean the editor-in-chief of this magazine, **Dennis Erokan**, is moving ahead with **CubeArt**, his interactive multimedia music company. The first artist on board is **Carlos Santana**. Erokan explains that the project will combine previously released music with hitherto unseen crosscultural visual art. ... **The Residents** are working on a second CD-ROM, this one entitled The **Gingerbread Men**. It sounds too weird to describe at this stage but it's scheduled for release as soon as October through ION. ... **V-2** is a new venture from veteran SOMA folks, **Brian Raffi**, **Bryan Weisberg**, and **David Curtis**. The first project is expanded electronic liner noters on the CD-ROM version of **Chris von Sneidern**'s CD, ***Big White Lies***, otherwise released in traditional format through Heyday Records. ... It looks as though expanded electronic liner notes are going to be one major avenue of approach the music industry takes as it staggers

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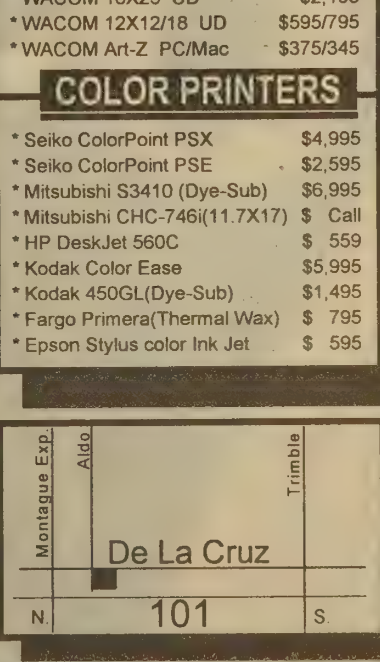

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continued from page 257

towards a musical version of multimedia. MCA is reported to be hot on V-2's heels with thirty releases scheduled before Christmas. What do I think? I don't—yet. But don't worry; when I've seen the products, I'll let you know.

Meanwhile, **Todd Rundgren** is working on the massive project of putting "the entire history of recorded music on a grand server in interactive form" according to manager **Erik Gardner**. The project may be completed in the early years of the next millennium—but as a betting man, I'm putting my money on it never being done. For a warm-up exercise, Rundgren and his new label, **Waking Dream**, are first releasing interactive versions of classic rock albums from the '60s through the '90s. Gardner claims Rundgren can "whip through an album in a week," figures they'll be in the stores by Christmas, but won't reveal any titles yet due to the delicacy of dealing with rock stars' egos. How's this for delicacy? Sounds to me like going into the graveyard, digging up the corpses, and rearranging the bones.

Now What Software has a second release in its CD-ROM atlas series with **Small Blue Planet: The Cities Below—The Aerial Atlas of America.** ... Getting way out of town, **Sumeria, Inc.** releases **OceanLife Volume IV**, yet another chance for **Jerry Borrell** to engage in his favorite pastime, scuba diving. This one's a two-CD-ROM set and focuses on Australia's **Great Barrier Reef**.

Also in the "mo'fo'us" category: **Ken Coupland**, who pops up in this column more than anyone else, is working up a demo with **Post Tool Design** for a CD-ROM on *his* favorite pastime, sleep. Well, one of his favorite pastimes. It's to be called **Morpheus**, and will cover techniques of lucid dreaming and educate the user on issues of sleep hygiene, including, Coupland claims, "how to give yourself a dream enema." No, I don't know what that means—but if you want to, will sign a nondisclosure, and have some bucks to invest, contact him at (510)547-8625. Sure, he's a friend of mine—but his ideas are more interesting than 99% of the schlock out there, that's why he's a friend. Make sure to read his stories every month in ***OnLine Design.***

And you can guess where this next item comes from. Editor **Richard Koman** has moved on from ***OnLine Design*** and **Elliot Bergson**, previously with ***NextWorld***, takes his place. Of course, he plans to expand its focus.

Sanctuary Woods hired **Lee Sheldon** as senior writer/director to help develop more satisfying interactive storylines. Someone's finally admitting that there's a problem? Wonders will never cease. Sheldon looks good for the job with experience screenwriting for ***Star Trek: The Next Generation*** and many other TV shows including a couple of soaps, and time that otherwise would have been misspent playing computer games. Now, what was it I've heard about "we don't want multimedia to be like TV?" I forget. ...Personally, I favor the show-biz approach, but you knew that already, didn't you? ■

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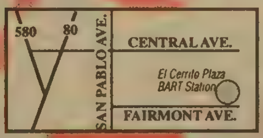

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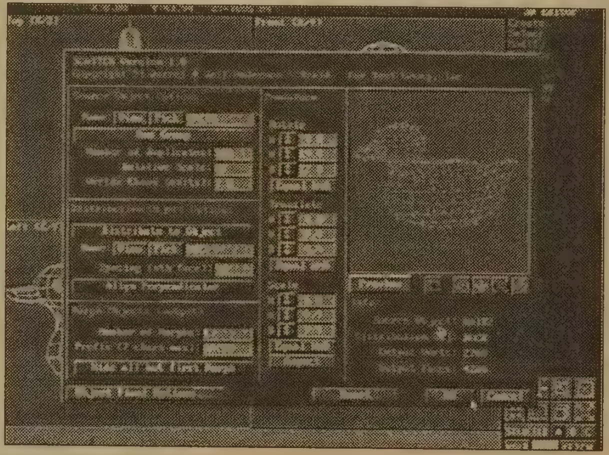
3D Studio Plug-Ins

Separating Autodesk 3D Studio From The Competition, IPAS Technology Provides Unlimited Possibilities Through Customization

Autodesk's introduction of its Plug-In Toolkit for 3D Studio, a professional modeling and animation software package for the PC, has created much excitement. This IPAS Toolkit underscores the reasons for the current industry shift towards modular, expandable, open-software systems. Gary Yost, lead developer on Autodesk 3D Studio expressed this when he said, "The 3D Studio Plug-In Toolkit really represents a tremendous opportunity for imaginative independent application developers. With an installed base of almost thirty thousand, the 3D Studio user community is now big enough that building even a single 3D Studio plug-in effect can make sense commercially."

WHAT IS IPAS?

The IPAS technology and interface is a system that lets you customize 3D Studio by calling in separate mini-programs, or plug-in modules (written in the C programming language), to create special effects in your animations. With the Plug-In Toolkit, 3D Studio developers can create IPAS special effects modules for their own in-house, proprietary uses or for commercial resale to other 3D Studio users. (See sidebar for acronym breakdown.)



Example of an IPAS user interface for Scatter, by the Yost Group, Inc. Courtesy Autodesk

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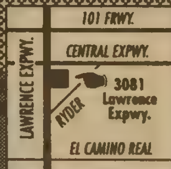

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EXAMPLES: PARTICLE SYSTEMS

Suppose you want to have a scene in your animation where it is raining. Rain is not a simple effect to re-create—it involves calculating physical properties such as drop sizes, amount of rainfall in a given area, the speed at which it falls, amount of splashing on impact, etc. Clearly, this will take a while to figure out. If you are on a tight schedule, the quickest solution is to buy the .AXP IPAS routine called Rain (available through Yost Group, Inc.). Plug it in, set the parameters, and render the scene. You will have precisely the kind of rain you want, from a drizzle to a downpour.

SIDEBAR

IPAS is an acronym that originated in Release 2 of Autodesk's 3D Studio. It was derived from using the first letters of the original four types of external processes that were developed:

I for Image processing (file extension .IXP)
P for Procedural modeling (file extension .PXP)
A for Animated stand-in (file extension .AXP)
S for Solid Pattern (file extension .SXP)

With 3D Studio Release 3, two other types have been added:

.KXP, for keyframe procedures, and
.BXP, for handling bitmap processes.

Maybe you would like to put bubbles in your animation to make champagne, or following a scuba diver, or just a room full of bubbles. Digimation has an .AXP IPAS routine called, naturally, Bubbles. After loading it in you set the quantity of bubbles you want in the scene. (You can choose up to fifteen hundred!) You would then determine their size, their shape, where they will start and stop, and the rate of speed at which they will travel. If you were to try to create this scene just using the Keyframer in 3D Studio it would be quite a task.

Would you like to apply the look of a Van Gogh or the thick heavy strokes of an oil painting to an animation? How about adding grain, scratches, and wobble, making it look as if it were an old film playing on a projector! Lately, you see this type of nostalgic effect used on TV in everything from retro music videos to Cadillac and travel commercials. The travel series for Mazatlan shows, in black-and-white film, a fishing boat on the ocean (complete with scratches and lint flying by). The scene turns gradually to color, showing that Mazatlan's present beauty and tranquillity are the same as were a hundred years ago. Pyros Partnership, a well-established special effects studio, is now making this IPAS routine called Oldmovie available, as well as many others.

.KXPs are a very exciting new type of IPAS routine that allow for dynamic simulations such as collision detection between objects, gravity, and wind forces. They also offer import/export capabilities for motion-control systems such as Schreiber's Puppeteer. Motion control is the ability to put sensors on a person and monitor their movement, then collect this data so that it can be applied to an animated mesh object or person to produce the lifelike motion of the real person.

Bones (from Digimation) is an very important new IPAS routine that is a spline-based skeletal deformation package. You can, for example, create backbones that bend and twist the object they are in, as if it were an internal wire armature, like Gumby. Because they are organic in nature, splines offer an added sense of realism to moving or animated objects. They work particularly well as the underlying structure of rendered people and creatures, or anything that needs to look alive.

Particle Giant by Darrel Anderson. This scene represents several new plug-ins from the Yost Group, Inc. Vapor for the smoke coming out of the head, and Disintegrate particles form the dissolving giant.

OTHER EXTERNAL PRODUCTS

.3DS (3D Studio) or .PRJ (project) files are 3D Studio native file formats. They are not IPAS routines, but can be developed by third-party vendors also for use in 3D Studio. They can be straight mesh object files or can contain information that makes the animator's job easier. Chris Thomas of The Schrieber Institute says, "A lot of mesh models that you purchase must be mapped with materials and also have mapping coordinates applied, which is time-consuming. The Schrieber Productivity Pack and Imagine meshes come ready with these done for you, and therefore, they look as photorealistic as possible. All you have to do is render them."

TALK ABOUT FUN!

An often difficult process in animation is making characters speak and lip-synching the speech with a soundtrack. Imagine Oscar Talks is a .PRJ file that is, in essence, a 3-D talking human head. His head can be put on the Imagine Humans Male mesh body and then made to talk. Oscar is used often as a narrator in architectural walk-throughs and training, documentary, and educational films. He consists of frames that are based on phonetic lip positions for easy sequencing of speech. First, plan the script, then time the movements, and voila, you have someone on your screen looking and talking back at you!

Many computer animation needs are specialized or unique to each project, and don't come as part of a commercial package. IPAS technology separates 3D Studio from the competition by going beyond offering a limited, fixed set of features within its software package; it provides unlimited possibilities through customization. 3D Studio, by itself, is just the starting point. IPAS routines are the way in which 3D Studio can be infinitely enhanced and extended to meet each user's own particular animation, modeling, and rendering needs. Putting development tools into the hands of the established 3D Studio user community creates a type of synergism and new ideas that surpass any one company's marketing and development resources—even a company as successful as Autodesk.

Autodesk 3D Studio is used by video post-production specialists, entertainment and special effects software developers, and animators.

3D Studio Release 3 comes bundled with twenty-six IPAS routines and many others are available through third-party developers and vendors. There are currently 150 IPAS routines available (often in sets of five or six related effects), and it is expected that by year's end there will be over two thousand IPAS routines available through third-party vendors. ■

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RESOURCES:

Autodesk Plug-In Developer's Toolkit, $249
Autodesk 3D Studio, $2995
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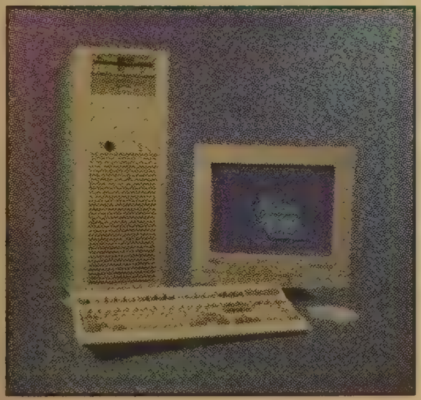

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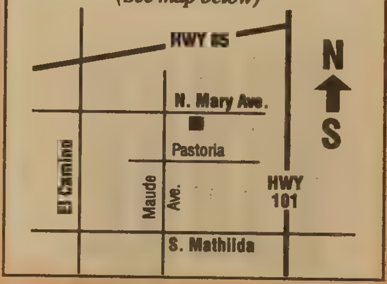

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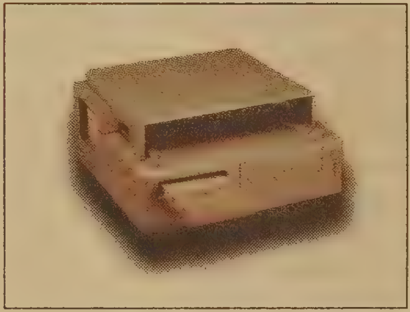

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The slide creation buttons are arranged vertically on the right side of the screen. You can drag one onto the Storyboard to replace an existing slide or insert it into the show; if you just click and release, the slide goes to the end of the sequence. Slides can be quickly moved or copied using the mouse. The "gallery" provides a handy temporary parking place for one or more slides.

There are several types of slide. One is a blank black slide; another is a color bar image for adjusting color. A slide can also represent an ARexx script or an audio event (8SVX samples and tracker mod files are supported).

The graphic slide is the one you'll use most often. Graphic slides are comprised of two parts: the background; and text, graphics, etc. placed on top of it. VSP comes with several background images designed to provide nondistracting backdrops for text. Alternatively, a small IFF brush pattern can be loaded and automatically tiled to fill the screen. A number of premade patterns are supplied, and you can create your own with any paint program. ProFills by JEK is a good commercial source for more patterns.

VSP can also generate customizable gradient backgrounds. These are not only beautiful, but they also require virtually no storage space, which could be important if you will be distributing the show on floppy disk.

Animations (ANIM5 format only) are also loaded into graphic slides. Total control over speed, looping, and time is featured. (Note: VSP expects anims to be looping.)

VSP divides color palettes into "fixed" and "assignable" ranges. Fixed colors are adjustable by the user for text and object coloring, including outline and shadows. Assignable colors are dynamically allocated by the program and used for backgrounds, gradients, brushes, antialiasing, etc. Generally, VSP automatically sets up half the palette as fixed, up to thirty-two fixed colors, but you can change this manually. The depth (which determines the number of colors), screen mode, and resolution for each slide are adjustable.

There are two ways to load a graphic: as a "picture" or a "pattern." (As we'll see later, the term "pattern" is somewhat of a misnomer.) When you load a graphic as a picture, the slide assumes the graphic's screen mode, resolution, and depth, and the entire palette becomes fixed.

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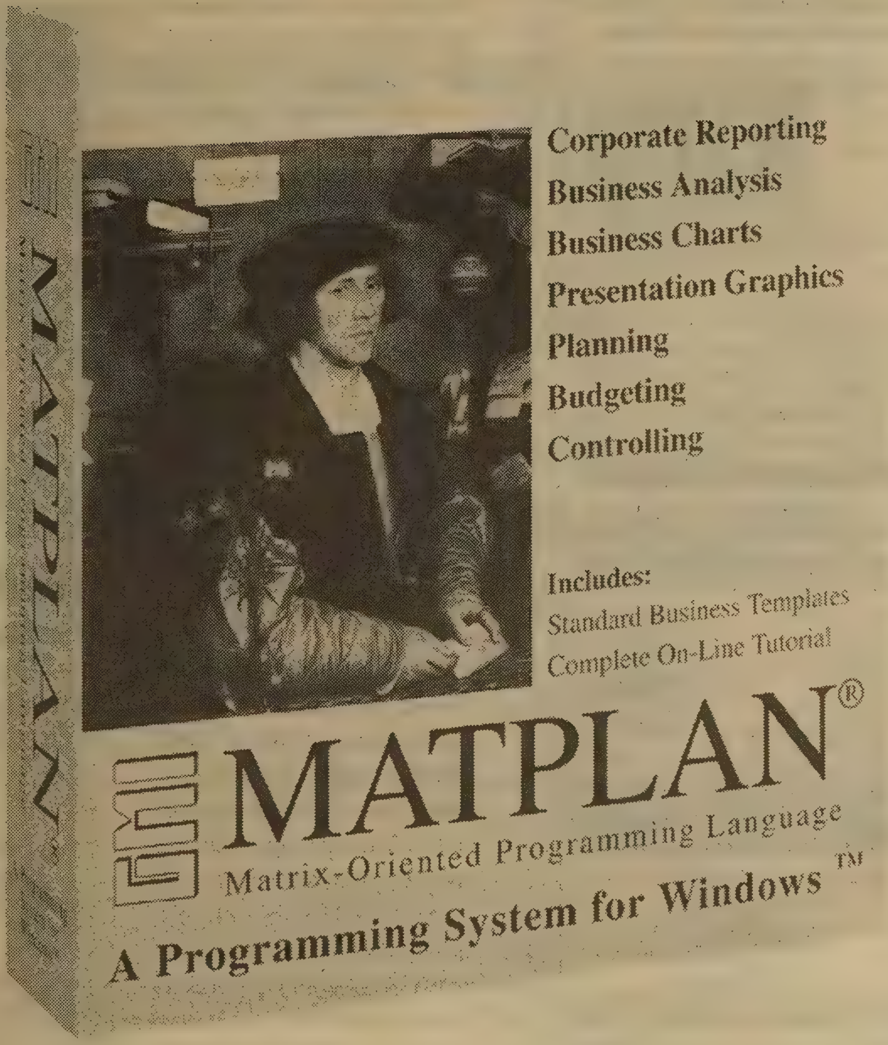
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"The MATPLAN Project Scheme"
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"The Integration of MATPLAN Into Standard Data Environments"
Speaker: Dr. Bernhard Büttgenbach, CEO of GMI, Inc. Palo Alto.

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This isn't a problem unless you're going to add titling; normally, a graphic's color palette won't contain the contrasting colors needed to make text stand out. If you're going to use titling, you'll have to do some color palette manipulations beforehand. Besides, VSP won't have any assignable colors for antialiasing, etc. (There is an exception if the loaded graphic uses fewer than the maximum possible bitplanes—eight for AGA, four for non-AGA. In this case, one bitplane is added and you may or may not end up with assignable colors.)

There is, of course, an easier way to maintain assignable colors. The trick is to load as a "pattern," a background picture that uses fewer than the number of assignable colors. For example, with a sixteen-color slide (eight fixed and eight assignable), you can load a four-color background. Loading an eight-color background would cause all sixteen colors to become fixed. The pattern tiling feature is irrelevant if the loaded background has the same resolution (i.e., height and width) as the slide.

The built-in palette editor features 24-bit RGB sliders, spread, copy, and switch functions, with the ability to load and save palette files. Palette colors can optionally be selected from a 24-bit color spectrum—even on non-AGA Amigas! (Actual displayed colors will be limited by hardware, however.)

Scala backgrounds, which are sixteen-color HiRes files, can be easily reduced to eight colors using ADPro or DPaint, since the images actually use eight colors at most. These work well if you manually set the fixed color bitplanes to two (i.e., four colors). Incidentally, outstanding backgrounds can be made using as little as four colors!

For titling, VSP can use any Amiga bitmapped or CG font, including color fonts. Large fonts work best for presentations and several are included with the program. Adding text to a slide is as easy as typing it on a page. Text can use gradient fills and be styled with bold, italic, underline, outline, and drop and cast shadows. Each line can be automatically justified and multilevel antialiasing is available. Also, outline width, line spacing, kerning, and shadow attributes are all adjustable.

An ASCII file can be imported with the ability to control fonts, etc. using special embedded commands. This is great for scrolling credits.

You can also add IFF brushes to a slide. If a color used in a brush doesn't already exist in the assignable

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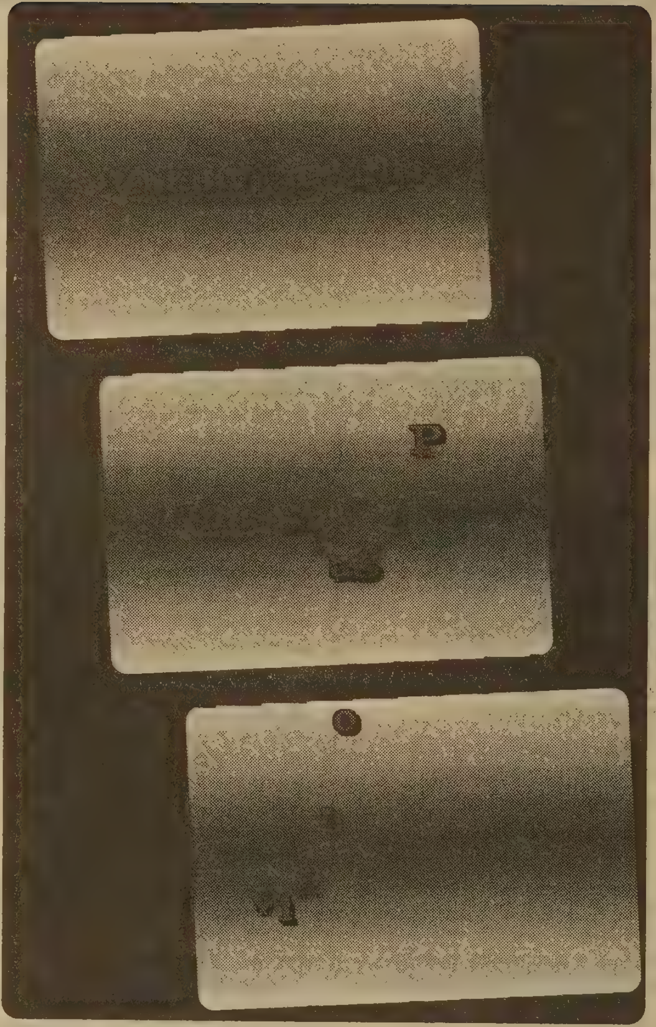
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE palette, VSP will attempt to load that color into an unused assignable spot. Excess colors will use the closest available color in the palette. Also, a library of twenty brushes can be set up for quick access to frequently used brushes. Warning: If a brush uses a fixed color and you change that color, VSP may select a different fixed color later on.

OBJECTS

VSP also features nine different objects like hearts, stars, boxes, ellipses, and arrows that can be added to a slide. These can be rotated, resized, and distorted at will. Multilevel antialiasing minimizes jaggies. Attribute control is similar to text, but objects can also be embossed, and color and shadows have a transparency setting.

Interactive buttons can be easily placed on a screen. A button can be a rectangle, brush, and/or text. Buttons can trigger ARexx scripts, sound, and transfer control to another slide.

Text, brushes, and objects can be positioned by hand or using several automated tools. The ordering of these items can also be set, which can affect the sequence of their appearance.



ACTORS

Lines of text, brushes, and objects can be animated onto a page as "actors." You can also group things together so they are treated as a single actor. All of the common "fly in" effects are included, but VSP features some interesting "overshoot" effects, where actors move past the intended stop point and then return as if they were connected to a rubber band. This really gives actors a life of their own—you'll probably be really tempted to overuse this in your work.

Another unique feature is the "piecemeal" option, which makes a text-actor fly in one letter at a time. Normally, this would make the effect take too long, so you also have the ability to overlap the animated pieces, adjusted from one piece at a time to the entire actor at once. Using the piecemeal option with an overshoot effect is very cool!

An alternative to piecemeal is the grid option. Actors are internally divided into a user-defined grid of rows and columns. Actors then fly in as pieces. Another option lets piecemeal and grid pieces appear to grow as they fly in!

After you preview a slide with actors, a replay screen appears that lets you review the animation with total control. You can step through it frame by frame, replay it, etc. You then can return to the actor screen and adjust effects, timing, delays, etc. This is an incredible help in getting a slide to play exactly right.

TITLING

A titling slide is essentially a graphic slide with a solid background using color 0. It's designed to hold text and objects that will be overlaid on top of video using a genlock.

Titling can also scroll over the preceding slide, if both slides have the same depth. They should also use the same screen mode, although they don't have to have the same resolution. An additional constraint is that the total depth of both slides cannot exceed the maximum for your Amiga—an AGA machine can have two four-bitplane slides and a non-AGA is limited to two two-bitplane slides. (I was unable to get this to work on my A3000, but it worked fine on my A4000. Oxxi has been alerted to the problem.)

FLOW CONTROL

Generally, slides are executed in linear fashion; however, playback control icons provide a way to direct the flow of a show. Also, there is a handy feature that lets you set the timing of slides by clicking the mouse as you play a show. This is great for syncing a show to music.

A timeline is also available to graphically adjust time parameters for slides and rearrange the play order. Since different types of slides may run in parallel (e.g., graphics and music), there are separate tracks for each type. Zooming capabilities are provided for precise editing. Most of the editing functions available on the Storyboard can be used here.

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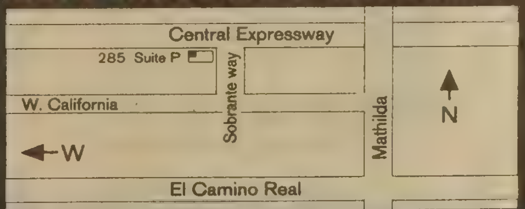

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Overhead time requirements are also shown for file loading time, object movement preparation, etc.

MORE GOOD TOOLS

VSP includes many helpful features, like context-sensitive online help. The animated transitions examples are invaluable. The custom file requester displays useful information on graphics and audio files and has the ability to preview them. VSP will also let you know when colors are being used that are too "hot" for video.

To create portable presentations, the show file and all subordinate files, including fonts, can be saved in one location like on a floppy disk.

VSP VS. SCALA

For anyone who does Amiga presentations, the first question on your mind is probably how VSP compares to Scala MM300.

Overall, I'd say Scala is a much more refined product; it has a more powerful ARexx implementation, cleaner page transitions when pushing hardware limitations, the ability to play anims from disk, support for more anim formats, a more straightforward interface, more built-in control of external devices, and text wipe-off effects—to name just a few advantages. (Of course, many of VSP's features, as described above, don't exist in Scala either.)

Scala is hampered by a joystick-port dongle, which even the player utility program requires. If you're developing a presentation on one machine to be played on another, the dongle can quickly become a real pain. VSP, on the other hand, has no copy protection and the player program is freely distributable. VSP is also less than half the price of Scala.

WISH LIST

There are a few things I'd like to see in VSP, like automatic text wrapping, actor wipe-offs, and animbrush support. Another shortcoming is you can't automatically back up through a show using the mouse without creating specific hot buttons. This is a vital feature for live presentations.

I'd also like to see text, brushes, and objects with the same features and capabilities. I want to be able to add an outline and shadow to a brush, as can be done with text; I'd like the ability to make text shadows partially transparent, as objects can be; etc., etc. I'm sure things like this will be addressed in future releases.

Kudos to programmer Gary Bonham on a superb initial release. Oxxi has a real winner on its hands. The power-to-price ratio is extraordinary.

The program requires a hard disk, 1MB Chip and 2MB of Fast RAM, and AmigaDOS 2.0 or greater. Look for an upcoming version called VSP+, which will include remote updating and scheduling capabilities (a la Scala InfoChannel, $2500), encapsulated PostScript support, and more. ■

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CORRECTION:

Last month's story on Jim Carey indicated the television show was called *Where in the World Is Carmen Sandiego?* This should have been *Where on Earth Is Carmen Sandiego?* Sorry, my fault. –*DN*

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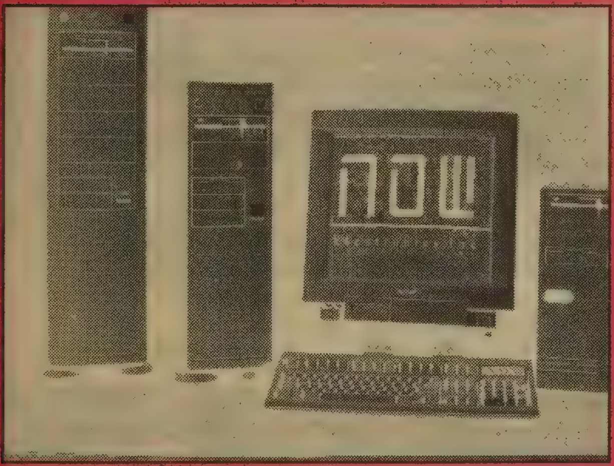

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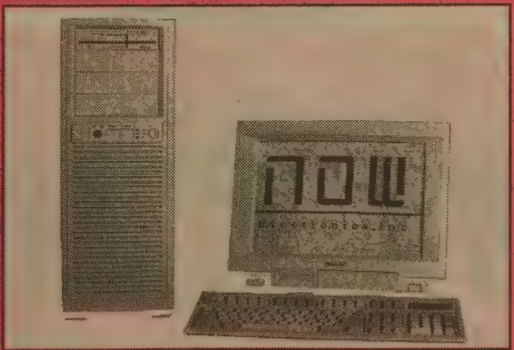

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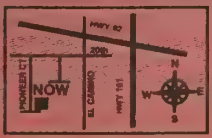

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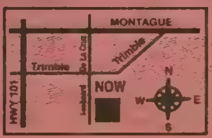

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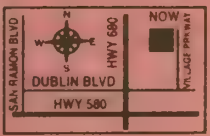

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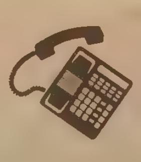

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August 1994
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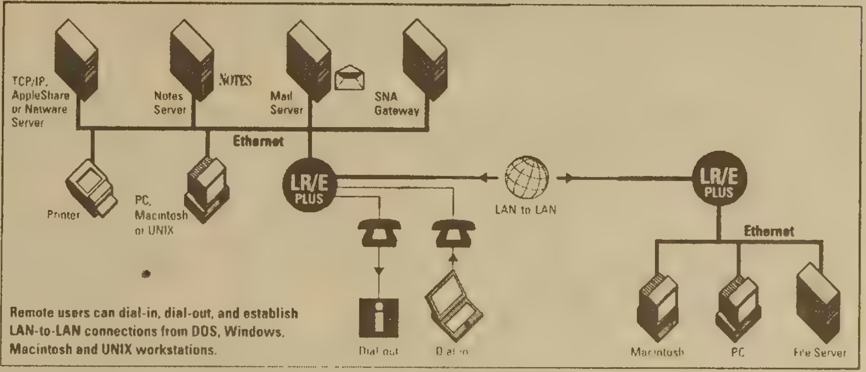
PC Magazine reviewed 11 remote access servers and chose Shiva's Lan Rover / E #1

The review praises Shiva for delivering a product that combines ease of installation and comprehensive management with great performance.



Remote users can dial-in, dial-out, and establish LAN-to-LAN connections from DOS, Windows, Macintosh and UNIX workstations.

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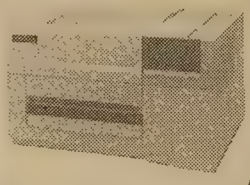

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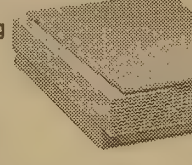

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- 16 Pages-per-minute (ppm) engine speed for letter, legal and executive paper sizes
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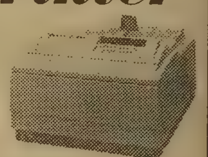

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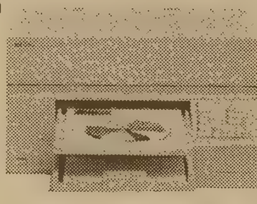

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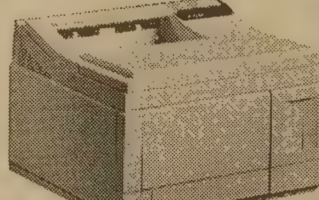

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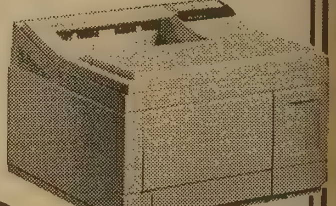
HP LaserJet 4M PLUS Printer

- Up to 12 pages per minute
- 600 dpi with RET, microfine toner
- 6MB Memory standard
- 100 sheet multipurpose and 250 sheet tray
- 35 Adobe Type I typefaces



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HP LaserJet 4si Printer

This 17 pages per minute, high-performance, 600dpi network printer offers the power & performance to meet users' expanding needs. Add interfaces, memory, paper-handling at any time. With Jet Direct Card and Duplex option is designed for multiple network environments.

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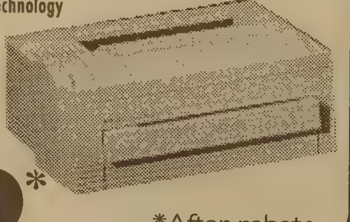
- 300 dpi laser printing with HP resolution enhancement technology
- 1MB Memory with memory enhancement technology



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*After rebate

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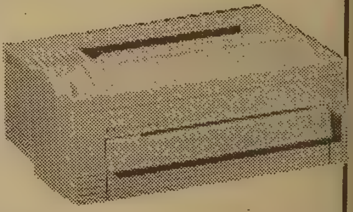

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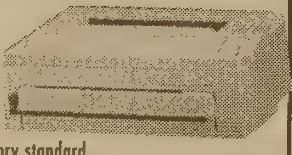

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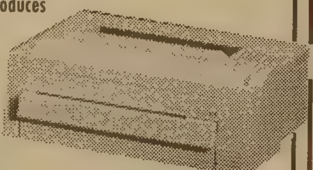
HP LaserJet 4P Printer

- 600 dpi with HP's Resolution Enhancement Technology and microfine toner produces the best 600-dpi output available
- 45 Scalable typefaces
- Full range of expansion options



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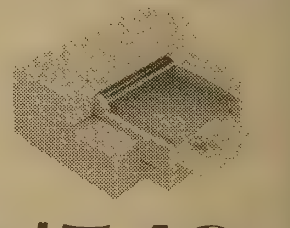

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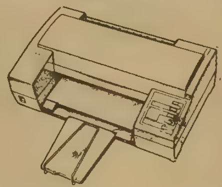

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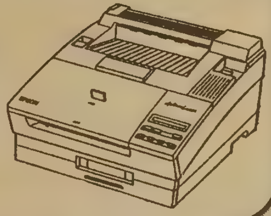

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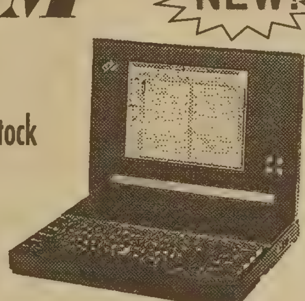

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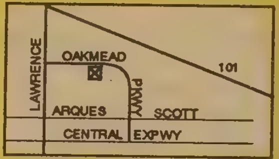

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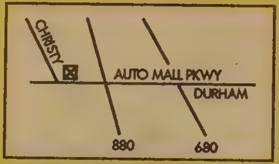

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Motherboard Benchmark Summary

Product	MHz	Cache	Landmark CPU V. 2.0	Pwr Mtr MIPS V. 1.7	Norton SI Computer Index V.6.0	InfoWorld CPU V. 1.0
Excalibur VLB	66	512KB	385.00	47	211.3	80.5
Enterprise IV	33/66	256KB	223.55	29.5	144.5	48.7
Enterprise IV	50	256KB	167.64	22.3	108.4	37.0
Enterprise IV	40	256KB	134.13	17.3	86.6	22.4
Enterprise IV	33	256KB	111.75	14.9	72.2	24.3
SprVoy VLB II	33/66	256KB	223.53	29.1	144.5	48.4
SprVoy VLB II	50	256KB	167.64	22.1	108.4	36.8
SprVoy VLB II	40	256KB	134.2	17.8	86.6	25.9
SprVoy VLB II	33	256KB	111.76	14.8	72.2	24.3

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- Mid Tower Case w/235W PS
- CPU Cooling Fan
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Calendar Of Events

Conferences, Shows, Special Events

September

September 20–23 Embedded Systems Conference And Expo. Santa Clara. Miller Freeman, Inc. Call: Mark Gulino, (415)905-2354 or (415)884-2670.

September 24 Robert Austin Computer Show And Sale. Cow Palace, San Francisco. Robert Austin Corp. Call: 1-800-346-0100.

September 24–25 Computer Products Show And Sale. Solano County Fairgrounds, Vallejo. MarketPro. Call: (415)456-6730.

September 28 Computer Publishing And Marketing Conference. San Jose. SIMBA Information, Inc. Call: Florence, (203)834-0033 ex. 133.

October

October 1 Robert Austin Computer Show And Sale. Santa Clara County Fairgrounds, San Jose. Robert Austin Corp. Call: 1-800-346-0100.

October 2 Computer, Ham Radio, Electronics Swap Meet. Las Positas College, Livermore. Livermore Amateur Radio Club. Call: (510)783-2803 days, 447-3857 eves.

October 8 Robert Austin Computer Show And Sale. Oakland Coliseum, Oakland. Robert Austin Corp. Call: 1-800-346-0100.

October 8–9 Computer Products Show And Sale. Cal Expo, Sacramento. MarketPro. Call: (415)456-6730.

October 8–9 Organizing For Access National Forum On Computer Networking, Community Action, And Democracy. San Diego. Computer Professionals for Social Responsibility. Call: (415)322-3778.

October 10 Health Care Symposium. Cupertino. Stanford University and Smart Valley, Inc. Call: (415)843-1260.

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CALL FOR PARTICIPATION

TECHNOLOGY AND PERSONS WITH DISABILITIES CONFERENCE

The Center on Disabilities, producer of the tenth annual Technology and Persons With Disabilities Conference to take place in Los Angeles in March 1995, is inviting authors to share applications of hardware and software, adaptive devices, training programs, and results of research. There is also a heavy consumer orientation to the conference, so papers of interest to parents and persons who are themselves disabled are encouraged. The conference is international in scope and focuses on infant, preschool, elementary, and secondary school programs for children with disabilities, their families, teachers, and school administrators; college and university programs; professors, physicians, clinicians, researchers, counselors, and program administrators; rehabilitation engineering; service providers; and administrators from the Department of Rehabilitation and other community agencies. The deadline for submissions is October 16, 1994. For more information and a proposal form contact Dr. Harry J. Murphy, Center on Disabilities, CSU Northridge, 18111 Nordhoff St., Northridge, CA 91330-8340; phone (818)885-2578, email hmurphy@vax.csun.edu .

NOTICE

Because of the plethora of listings received and the limited space available, we are not able to list every class offered by every educator. We try to give a representative sample when we can't fit all of a company's offerings, but please call the organizations for complete information on their classes or to receive a course catalog.

October 10–13 International Display Research Conference. Monterey. Society for Information Display. Call: Ralph Nadell, Palisades Institute for Research Services, (212)620-3341.

October 11–12 Cellular Digital Packet Data Developers' Conference. Santa Clara. CDPD Forum, Inc. Call: 1-800-275-0070.

October 11–13 Multimedia Expo. San Francisco. American Expositions, Inc. Call: (212)226-4141.

October 14–18 C++ World Conference. San Jose. Smith and Smith. Call: (212)274-0640.

October 15 Robert Austin Computer Show And Sale. Cow Palace, Daly City. Robert Austin Corp. Call: 1-800-346-0100.

October 16 Computer Products Show And Sale. Marin Civic Center, San Rafael. MarketPro. Call: (415)456-6730.

October 17–19 Tech Decisions '94 Conference And Expo. San Jose Convention Center. CMP Trade Show & Conference Services. Call: (516)733-6827.

October 18 Perspectives On The Information Technology Market In Education Conference. San Francisco. CCA Consulting. Call: (617)237-8950.

October 22 Robert Austin Computer Show And Sale. Santa Clara County Fairgrounds, San Jose. Robert Austin Corp. Call: 1-800-346-0100.

October 23 Computer Products Show And Sale. Sonoma County Fairgrounds, Santa Rosa. MarketPro. Call: (415)456-6730.

October 24–26 National Human Resources Information Technology Exposition And Conference. San Jose. Blenheim NDN, Inc. Call: 1-800-232-3976.

October 24–28 Win-Dev West 1994 Conference. Santa Clara. Boston University. Call: 1-800-218-4194.

October 25 Conference On Electronic Communication: Email, Newsgroups, BBSes, Internet. San Francisco. San Francisco Business Computers. Call: (415)788-5338.

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486DX2-66/128K ASUS EISA VLB	1,142
486SLC2-66/64K IBM VLB	862
486DLC-33/128K VLB	812
486DLC-40/128K VLB	822
486DX-33/128K VLB	872
486DX-40/128K VLB	882
486DX2-50/128K VLB	902
486DX2-66/128K VLB	972
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Pentium P5-66/256K VLB/PCI	1,622
Pentium P5-90/256K VLB/PCI	1,762

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- 4 MB RAM 70NS
- **200MB HDD**
- 1.2MB and 1.44MB Floppy Drive
- IDE 2HD/2FD Controller w/2S/1P/1G
- 512KB SVGA Card
- 14" SVGA .28 Color Monitor
- 101-Key Enhanced Keyboard
- Enhanced Case w/Power Supply
- Microsoft Compatible Mouse w/Pad

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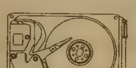
250MB Hard Drive	Add $60
340MB Hard Drive	Add $90
420MB Hard Drive	Add $110
540MB Hard Drive	Add $180
14" Non-Interlaced Monitor	Add $20
15" Non-Interlaced Monitor	Add $100
VLB IDE Controller	Add $20
PCI Bus VGA Card w/1MB	Add $90
16BIT SVGA Card w/1MB	Add $20
Cirrus Logic/Trident VLB w/1MB	Add$30
Window Accelerator w/1MB	Add $20
Orchid Fahrenheit 1280	Add $90
Diamond S.S. Pro VLB w/1MB	Add $60
250MB Tape Back-up	Add $130
16BIT Ethernet Card	Add $32
Deluxe Speakers	Add $8
Mitsumi CD-ROM w/Card	Add $80
Double Speed CD-ROM w/Card	Add $140
Sound Blaster Pro Deluxe	Add $80



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340MB	CPF3340A	13ms	3.5"x1"	$195
420MB	CPS420A	<12ms	3.5"x1"	$220
540MB	CP30544	<12ms	3.5"x1"	$285

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420MB	WD2420	13ms	3.5"x1"	$225
540MB	WD2540	12ms	3.5"x1"	$295

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Super Voyager II 486-33 256k VLB, 7 Slots	$625
Super Voyager II 486-DX2-66 VLB, 7 Slots	$749
Enterprise IV 486-33 256k EISA VLB	$735
Enterprise IV 486-DX2-66 256k EISA VLB	$935
ALARIS (IBM)	
486BL3X-75MHz VLB w. CPU & Math Proc.	$439
486SLC-33 / 66 16k Internal cache ISA v.2 w. CPU & Math Proc.	$235
486SLC2-66 64k VLB w/CPU & Math Proc.	$269
MICRONICS	
JX30 486-DX2-66 256k VLB w. Zif socket	$285
486-33 256k EISA VLB	$495
486-DX2-66 256k EISA E2	$395
PCI 586-60 256k ISA 3PCI slots	$495

CASE WITH POWER SUPPLY

Mini Tower Case w/230W Power Supply	$37
Desktop AT Case w/200W Power Supply	$43
Medium Tower Case w/230W Power Supply	$61
Full Tower Case w/250W Power Supply	$76
UPS 400VA / 600VA / 900VA	$170 / 250 /360

CD-ROM / MULTIMEDIA

Creative Labs	
Sound Blaster Value	$52
Sound Blaster Pro	$72
Sound Blaster 16 Value	$92
Sound Blaster 16 MCD	$105
Sound Blaster 16 SCSI-2	$149
Sound Blaster AWE-32	$268
Discovery CD 16 Upgrade Kit	$289
Edutainment CD 16 Upgrade Kit	$374
GameBlaster CD 16 Upgrade Kit	$365
WaveBlaster	$169
Mediavision	
Pro Audio Spectrum 16	$79
Pro Audio Studio 16	$125
Premium Sound 3D	$149
Chinon CDS535 (Int.) SCSI	$288
NEC CDR 510 Triple Speed SCSI Internal	$315
NEC 3xi (CDR 500) Triple Speed SCSI Internal	$430
Panasonic CD-562 (Double Speed) w/Card	$136
SONY CD-ROM (Double Speed) w/Card	$124
TEAC CD-50 (SCSI-2) Internal	$185
PLEXTOR (Texel)	
DM3028 (SCSI) Internal	$298
Toshiba XM-3401B (SCSI) Int / Ext	$274 / 358
Trantor SCSI Host w/Driver	$48
Deluxe Speakers	$8
16-Bit Audio Card	$88
Double-Speed CD-ROM	$100

PRINTERS

Canon BJ 200e	$259
Panasonic 2123	$240
Deskjet 1200c / Postscript	$1,375 / 1,975
Deskjet 500 / 500c / 550c	$295 / 395 / 499
HP Laserjet 4 / 4M / 4L / 4ML	$1,365 / 1,865 / 635 / 998

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TEAC 1.2MB 5.25	$45
TEAC 1.44MB 3.5	$35
TEAC Dual Floppy Drive 1.2 & 1.44MB	$98
Colorado Tape Backup 120MB	$94
Colorado Tape Backup 250MB	$154
Archive 250MB Tape Backup Floppy Con.	$160

NETWORK CARD / SOFTWARE

3COM	
3C509-16 Etherlink III 16 bit Coax/TP	$118 / 118
COMPULAN	
NE 600E 16 bit TP	$75
NE 200E 16 bit Coax	$65
NOVELL CARDS	
NE2000 16 bit Coax	$130
NE2000 16 bit TP	$135
NOVELL SOFTWARE	
Netware 3.12 for 5 / 10 / 20 Users	$595 / 1,290 / 1,895
Netware 4.01 for 5 / 10 / 20 Users	$820 / 1,820 / 2,630

SCANNERS

ScanJet IICX Color w/Kit	$985
ArtiScan Scanner 600 / 800 / 1200	$815 / 915 / 1,185

SOFTWARE

Personal Netware Software	$85
Microsoft DOS 6.2	$40
Microsoft Windows 3.1	$45
CD-ROM Softwares	$Call

MONITORS

14" SVGA 1024x768 .39	$174
14" SVGA 1024x768 .28 Internal	$196
14" SVGA 1024x768 .28 NI	$208
NEC 3V 15" Flat Screen	$449
NEC 4FGe 15" Flat Screen	$598
NEC 5FGe 17" Flat Screen	$941
NEC 5FGp 17" Flat Screen	$1,065
NEC 6FGp 21" Flat Screen	$1,980
Viewsonic 6E 14" 0.28DP	$256
Viewsonic 15E 15" 0.28DP	$356
Viewsonic 17 17" 0.28DP	$916
Viewsonic 20 20" 0.28DP	$1,460
Viewsonic 21 21" 0.26DP	$1,698
Mag DX15F 15" 0.26DP	$368
Mag DX17F 17" 0.26DP	$668
Nanao F340iw	$629
Nanao F550iw	$920
Nanao F560iw	$1160

VIDEO CARD-VLB-VIDEO CARDS

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Matrox	
MGA PCI 2+	$395
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#9GXE 64 2MB DRAM VLB/PCI	$250
#9GXE 64 Pro 2MB VRAM VLB/PCI	$335
#9GXE 64 Pro 4MB Vram VLB/PCI	$515
ATI	
Wonder 1MB ISA	$108
Ultra Plus 2MB DRAM PCI/VLB/ISA	$163
Ultra Pro 2MB VRAM PCI/VLB/ISA	$220
Ultra Pro 2MB VRAM EISA	$276
Ultra Pro Turbo 2MB VRAM PCI	$268
Diamond	
SpeedStar Pro 1MB VLB/ISA	$96/96
Stealth 24 1MB VLB/ISA	$117
Stealth 32 1MB/2MB PCI	$110/149
Stealth 64 2MB VRAM PCI/VLB	$275
Viper 2MB VLB/PCI	$295
Orchid	
Kelvin VLB (64-Bit) 1MB/2MB	$126/176
Kelvin PCI (64-Bit) 1MB/2MB	$126/176
Genoa 8500 VLB 1MB	$85

FAX / MODEM

Zoltrix 14.4K V.32bis, V.42bis I/E	$85 / 138
US Robotics Sportster 14.4K I/E	$102 / 122
US Robotics Courier Series	$Call
Intel SatisfaxtionModem/400e	$280
Intel Fax/Modem 14.4K	$125
14.4 Fax/Modem	$64
Hayes Optima 28.8 V. FC Ext	$435
USR Sportster 28.8 Int/Ext	$195/220

CONTROLLERS

IDE 2FD/2HD with 2S/1P/1G	$11
IDE with I/O for VESA Local Bus	$18
Enhanced I/O (2S/1P) w/16550 UART Chip	$26
IDE I/O (2S/1P) w/16550 UART Chip	$34
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Adaptec	
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1542CFK w/Kit (SCSI)	$225
2742 EISA (SCSI)	$220
2742TK EISA (SCSI)	$338
2742T EISA (Twin SCSI)	$268
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DTC 2290 EISA IDE	$114
DTC 2280 ISA IDE	$14
DTC 2278 VLB IDE	$26
Promise DC-200 IDE Cache Controller	$86
Promise DC-420 VLB w/512K Cache	$96
Promise DC-4030 VLB IDE Cache Controller	$100

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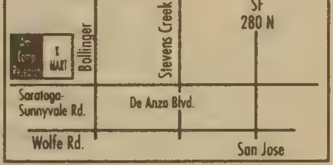

October 25–26 Geoworks Technology Summit '94. Burlingame. Geoworks. Call: 1-800-524-1857 ext. 1214.

October 25–27 Telecommuting 94 Conference. San Francisco. ICMI. Call: 1-800-854-0056.

October 29–30 Computer Products Show And Sale. Solano County Fairgrounds, Vallejo. MarketPro. Call: (415)456-6730.

November

November 2–4 UNIX Perspectives Conference. Dallas, TX. UNIX Perspectives. Call: 1-800-767-2336.

November 5–6 Computer Products Show And Sale. Cal Expo, Sacramento. MarketPro. Call: (415)456-6730.

November 6 Computer, Ham Radio, Electronics Swap Meet. Las Positas College, Livermore. Livermore Amateur Radio Club. Call: (510)783-2803 days, 447-3857 eves.

November 12 Computer Products Show And Sale. Sonoma County Fairgrounds, Santa Rosa. MarketPro. Call: (415)456-6730.

November 13 Computer Products Show And Sale. Marin Civic Center, San Rafael. MarketPro. Call: (415)456-6730.

November 14–18 COMDEX Conference. Las Vegas. Smith and Smith. Call: (617)449-6600.

November 14–18 Enterprise Management Summit Conference. Santa Clara. Communications Week. Call: 1-800-340-2111.

November 14–18 USENIX Symposium On Operating Systems Design And Implementation. Monterey. ACM SIGOPS and IEEE TCOS. Call: (714)588-8649.

November 26 Computer Products Show And Sale. Solano County Fairgrounds, Vallejo. MarketPro. Call: (415)456-6730.

November 27 Computer Products Show And Sale. Scottish Rite Center, Sacramento. MarketPro. Call: (415)456-6730.

December

December 3 Computer Products Show And Sale. Sonoma County Fairgrounds, Santa Rosa. MarketPro. Call: (415)456-6730.

December 4 Computer, Ham Radio, Electronics Swap Meet. Las Positas College, Livermore. Livermore Amateur Radio Club. Call: (510)783-2803 days, 447-3857 eves.

December 5–7 IT Services '94 Conference And Expo. Santa Clara. Creative Expos & Conferences. Call: (508)660-7099.

December 10–11 Computer Products Show And Sale. Cal Expo, Sacramento. MarketPro. Call: (415)456-6730.

December 12–14 DECUS Conference. Anaheim. Smith and Smith. Call: 1-800-842-7220.

December 17–18 Computer Products Show And Sale. Solano County Fairgrounds, Vallejo. MarketPro. Call: (415)456-6730.

January

January 17–19 SoftExpo95 Conference And Exhibit. San Jose. *Software Publisher* magazine. Call: ExpoMasters, (303)771-2000.

January 31–February 2 Display Manufacturing Technology Conference. Santa Clara. Society for Information Display. Call: Mark Goldfarb, 1-800-787-7477.

February

February 13–17 Software Development '95 West Conference. San Francisco. Software Development Conference and Show Group. Call: (415)905-2784.

Classes, Seminars, Workshops

September

September 21 Advanced Informix-SQL Class. Pleasanton. AT&T Technical Education Center. Call: 1-800-TRAINER, prompt 1, ext. 6564.

September 21 Advanced Macro For Quattro Pro Class. San Jose. InfoMind. Call: (408)243-1121.

September 21 Excel 5.0 Level 2 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 21 Hands-On TeleMagic Training For DOS V12 And V14 Class. San Jose. SofTel Training & Consulting. Call: (408)926-0885.

September 21 Inter What? Intro To The Internet Seminar. Silicon Valley. Computer College Silicon Valley. Call: (415)325-3648.

September 21 Intermediate Object PAL Programming Class. Santa Clara. The Dublin Group. Call: Heather Taylor, 1-800-464-8344 ex. 126.

September 21 Intermediate Word 6.0 Class. San Jose. InfoMind. Call: (408)243-1121.

September 21 Intermediate Word For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

September 21 Lotus 1-2-3 For DOS/Windows Level 2 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 21 PageMaker For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

September 21 Paradox 4.5 For DOS/Windows Level 3 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 21 Paradox For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

September 21 UNIX On The Internet Seminar. Silicon Valley. Computer College Silicon Valley. Call: (415)325-3648.

September 21–22 Network Fundamentals Hands-On Class. Oakland. Excel Micro Solutions. Call: (510)836-2040.

September 21–23 AutoLISP Level I Workshop. Santa Clara. The Copper Connection. Call: (408)970-9838.

September 21–23 Novell System Manager Class. Oakland. California Computer Options. Call: (510)444-5700 ex. 8.

September 21 & 23 Intro To DataEase 4.2 Class. San Francisco. The Dublin Group. Call: Heather Taylor, 1-800-464-8344 ex. 126.

September 21–October 12 Computer Media Fundamentals Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

September 21–November 30 Intro To Database Management Systems Class. Sunnyvale. UC Santa Clara Extension. Call: (408)748-7398.

September 21–November 30 Software Quality Assurance And Testing Class. Silicon Valley. UC Santa Clara Extension. Call: (408)748-7375.

September 22 Access 2.0 Level 1 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 22 Hands-On TeleMagic Training For Windows Class. San Jose. SofTel Training & Consulting. Call: (408)926-0885.

September 22 Intermediate dBASE For Windows Class. San Francisco. The Dublin Group. Call: Heather Taylor, 1-800-464-8344 ex. 126.

September 22 Internet Communications Seminar. Silicon Valley. Computer College Silicon Valley. Call: (415)325-3648.

September 22 Intro To Lotus 1-2-3 Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

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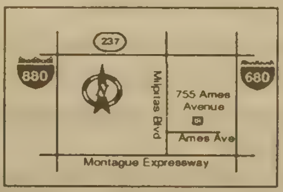
■Shipping and handling charges are extra and are not refundable. ■All returns subject to 15% restocking fee & cover only Linden Micro Tech brand computers,excludes peripherals and software. ■No returns after 30 days.
■Defective items replaced or repaired at our discretion. ■Price & availability subject to change w/o notice. ■No responsible for typos.



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September 22 Intro To PowerPoint Class. San Jose. InfoMind. Call: (408)243-1121.

September 22 Intro To Windows/QuickBooks Part 1 Class. San Jose. InfoMind. Call: (408)243-1121.

September 22 LAN Fundamentals Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

September 22 Operating A BBS Seminar. Silicon Valley. Computer College Silicon Valley. Call: (415)325-3648.

September 22 The How-To's Of Managing A Distributed Environment Free Presentation. San Jose. Computer Literacy Bookshop. Call: (408)435-1118.

September 22 What's New On The Internet Seminar. Silicon Valley. Computer College Silicon Valley. Call: (415)325-3648.

September 22 Word For Windows 6.0 Level 2 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 22–23 Advanced PC Troubleshooting Seminar. San Jose. Essential Seminars, Inc. Call: 1-800-723-7025.

September 22–23 Expert 2D AutoCAD Workshop. Santa Clara. The Copper Connection. Call: (408)970-9838.

September 22 & 29 Scanning Basics Class. Santa Clara. UC Santa Cruz Extension. Call: (408)427-6620.

September 23 Advanced FileMaker Pro For Mac Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

September 23 Computers For Dummies Seminar. Emeryville. Network Computing. Call: (510)235-9766.

September 23 FileMaker Pro For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

September 23 Intermediate Excel For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

September 23 Intro To Microsoft Access For Windows 2.0 Class. Santa Clara. The Dublin Group. Call: Heather Taylor, 1-800-464-8344 ex. 126.

September 23 Intro To WordPerfect 6.0 Class. Santa Clara. The Dublin Group. Call: Heather Taylor, 1-800-464-8344 ex. 126.

September 23 Networking For Dummies Seminar. Emeryville. Network Computing. Call: (510)235-9766.

September 23 Using Windows 3.1 Beginning Course. San Francisco. Clear Communication. Call: Carl, 1-800-783-7531.

September 23 WordPerfect 6.0 For DOS Level 3 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 23–25 Home Movies Intensive Workshop. San Francisco. San Francisco Digital Media Center. Call: (415)824-9394.

September 23 & 26 Project 4.0 Level 1 & 2 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 24 Build A Complete VLB 486 (SVGA, 420HD) For Under $800 Class. San Francisco. Clear Communication. Call: 1-800-783-7531.

September 24 Intro To Interactive Multimedia Workshop. San Francisco. Bay Area Video Coalition. Call: (415)861-3282.

September 24 Intro To Word Class. San Jose. InfoMind. Call: (408)243-1121.

September 24 Multimedia In Sales And Marketing Class. San Francisco. SFSU Extended Education. Call: (415)904-7700.

September 24 NetWare 3.12 System Manager Seminar. San Francisco. Network Services Group. Call: (415)863-8407.

September 24 Publishing On The Internet Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

September 24–25 Mac Superweekend Seminar. San Francisco. The Software Training Group. Call: (415)397-4158.

September 24–October 22 Animation Production Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

September 25 Intro To WordPerfect Class. San Jose. InfoMind. Call: (408)243-1121.

September 26 dBase IV Level 2 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 26 Intro To WordPerfect 6.0 For Windows Class. San Francisco. The Software Training Group. Call: (415)397-4158.

September 26 Shell Command For Users Class. Pleasanton. AT&T Technical Education Center. Call: 1-800-TRAINER, prompt 1, ext. 6564.

September 26–27 3D Tools And Techniques Workshop. Santa Clara. The Copper Connection. Call: (408)970-9838.

September 26–27 Advanced Troubleshooting For The Macintosh Seminar. San Jose. Data-Tech Institute. Call: (201)478-5400.

September 26–27 Novell NetWare 3.1x Advanced Administration Class. Oakland. MIS Services, Inc. Call: (510)208-5700.

September 26–27 Visual Basic Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

September 26–28 Excel 5.0 Macros And VBA Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808 ext. 209.

September 26 & 28 Word 6.0 Part 1 Class. Oakland. PCLink. Call: (510)562-5511.

September 26–October 17 Photoshop 1 Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

September 26–December 5 Systems Analysis And Design Class. Sunnyvale. UC Santa Clara Extension. Call: (408)748-7398.

September 27 A Career In Multimedia Workshop. San Francisco. Bay Area Video Coalition. Call: (415)861-3282.

September 27 Advanced Microsoft Excel 5.0 Class. San Francisco. The Dublin Group. Call: Heather Taylor, 1-800-464-8344 ex. 126.

September 27 Fox Pro 2.5 For DOS/Windows Level 3 Class. Emeryville. Northwest Computer Systems. Call: Cathy Day, (510)653-0808 ext. 209.

September 27 Intermediate Quattro Pro 5.0 Class. San Francisco. The Dublin Group. Call: Heather Taylor, 1-800-464-8344 ex. 126.

September 27 Intermediate WordPerfect For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

September 27 Intro To Ami Pro Class. San Francisco. The Software Training Group. Call: (415)397-4158.

September 27–29 Advanced Novell System Manager Class. Oakland. California Com-

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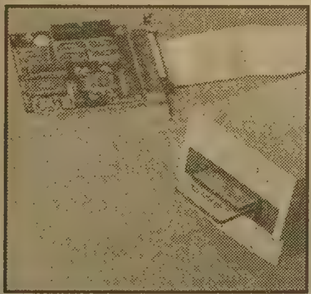

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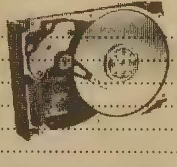

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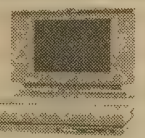

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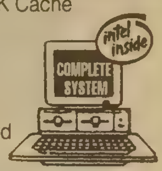

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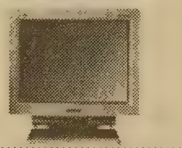

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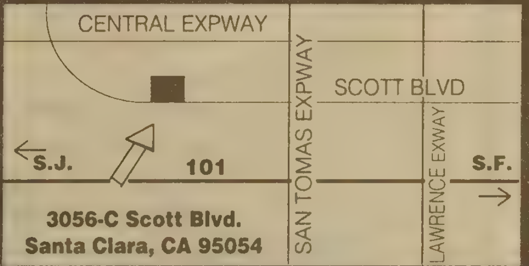

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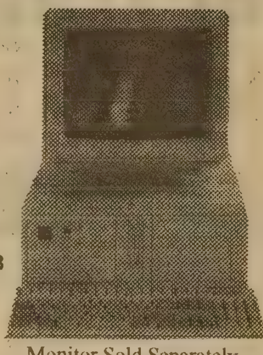
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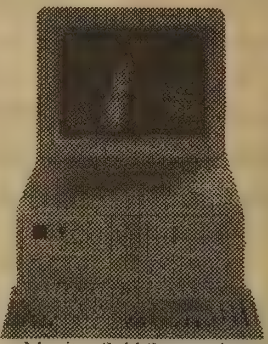
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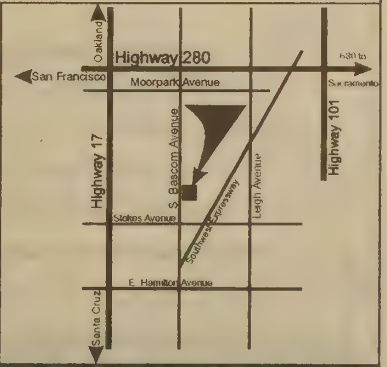

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Bay Area BBSes

By Kathleen Creighton

Sysop Survey: BBS Vs. The Net

Attention sysops! I had to be dragged, kicking and screaming, into this Internet business, and now I'm being besieged with information regarding SLIP/PPP, World-Wide Web (with its counter-intuitive command statements), Mosaic, ad infinitum. More than not being ready, at this point I think I just don't care to be up-to-date with the latest and greatest (but probably not great enough) whiz-bang tech.

So I got to wondering what all the hobbyists—the pioneers in one-to-many ASCII communications—are thinking about the state of BBSing these days. Most of us in the Bay Area are a local call away from a flat-fee, fairly cheap, Internet provider (IP), and have access to more information, filing systems (gophers), and discussion groups (Usenet) than we ever dreamed could exist online. It was always easy to thumb the die-hard BBS nose at the commercial services and their huge access fees, but IPs are financially accessible to almost everyone.

I have some questions for you, whether you're a sysop or an inveterate BBS user, because I'd like to know what you're thinking about the state of BBSing in the Bay Area. These questions are just a springboard—if you have other things to say about the phenomenon of the "BBS vs. the net," please feel free. Send your missives to casey@well.sf.ca.us. Please do not write to me via USPO in care of MicroTimes because those letters are not guaranteed to reach me in a timely manner. I'll gather up your thoughts and publish them in a future column.

- As the number of modem users in the Bay Area increases, have you been seeing changes in traffic patterns? Or are your numbers staying fairly static?
- If your board carries Usenet newsgroups, has the demand peaked or is it increasing?
- If your board charges a subscription fee, have you had to re-evaluate that fee based on what's available to your potential subscribers for only a few dollars a month more?
- If you could, would you put your BBS "on the net"?

Infoplus BBS in Arizona is a terrific example of implementing a BBS interface to the Internet. Telnet to bbs.infop.com takes you right there and menus tell you what's available. Special interest message areas are listed—this looks like a BBS made precisely for someone who wants to rent space to run a specialized board.

In fact, it was an ad posted in the Usenet newsgroup alt.bbs.ads for the American Flyer BBS (cycling) on Infoplus that piqued my curiosity enough to telnet in and take a look around. There are many specialized BBSes that would be well-served by having national and even worldwide exposure via telnet.

- Is there pent-up demand for BBS software other than Major BBS to interface with the Internet? (Mac BBS software FirstClass is technically telnettable, but for all intents and purposes is barely usable in VT-100 mode.)
- Have you participated, or have you considered participating, in one of the ba.* (Bay Area regional) newsgroups on Usenet? Have you thought about tailoring a ba.* group for your special interest?
- Beyond providing availability of shareware software and adult-oriented material, do you think a BBS can generate enough interest in this market to make operating a board worthwhile?
- Do you think the local hobbyist BBS will eventually become extinct in an Internet-saturated area such as this one?

Continued on page 304

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- 3 1/2" Floppy Drive
- Conner 250MB Hard Drive - 12ms
- Trident Super VGA Vesa Local Bus
- Super VGA 14" Non-Interlaced Monitor (0.28 dot) 1024x768 Resolution
- 101 Enhanced Keyboard
- 3 Vesa Local Bus Slots
- Pentium® P-24 Overdrive Ready
- Ami bios / internal clock & battery

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- 486DX Motherboard/CPU
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- ○101 Keytronic Keyboard

60MHz $2187

UMiracle 66MHz $2295

Dare to Compare

PC Bench 8.0 and WinBench 4.0 Result

- Processor	78.34
- Video	5450.08
- Disk	1559.00
DOSMark	1106.33
Graphics WinMark	35.00
Disk WinMark	1410
WinStone	88.00

Test result based on our 66MHz system with16MB. See your PC Magazine for comparsion.

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- ○Diamond Stealth 64 PCI S3-964 2MB VRAM
- ○Hitachi SuperScan 15S 1280x1024 0.28DP Green Monitor
- ○Premium Digital Medium Tower 230W PS
- ○101 Keytronic Keyboard

90MHz $2573

90MHz Available NOW! Call for 100MHz!!

Dare to Compare

PC Bench 8.0 and WinBench 4.0 Result

- Processor	100.84
- Video	6575.57
- Disk	1708
DOSMark	1349.04
Graphics WinMark	39.7
Disk WinMark	1600
WinStone	103.4

Test result based on our 90MHz system with16MB. See your PC Magazine for comparsion.

Fully integrated Intel Premiere PCI-II motherboard provides Enhanced IDE interface supporting Logic Block Addressing, Mode-3 IDE, HiSpeed 16550 UART Serials, enhanced Parallel, plus our new perfectly-matched WD 730MB Enhanced IDE, making IDE throughtput the best it can! Diamond Stealth 64 cranks out ultra high 35 Million Winmark V4.0. All these for mid-two thousands! What a package!

SuperMicro P5 PCI/VLB 90/100MHz

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- ○16MB 70ns 72Pin SIMM RAM (8MB x 2pcs)
- ○VLB IDE/FD 2S/1P/1G with HiSpeed 16550UARTs, 2.88MB Support
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- ○1.44M TEAC Floppy Drive
- ○Fujitsu 1.08GB Fast Wide SCSI-2 68Pin M2694EQA HD
- ○Diamond Viper SE PCI Weitek P9100 2MB VRAM
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- ○Premium Digital Full Tower 250W PS
- ○101 Keytronic Keyboard

90MHz $3727

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AIR P5 EISA PCI 90/100MHz

90MHz Available NOW! Call for 100MHz!!

- ○AIR P5 Pentium EISA PCI 512K 15ns Cache Motherboard with 3 PCI/4 EISA slots, Adaptec 7870 PCI Fast WIDE SCSI-2 & Fast SCSI-2 onboard w/cable HiSpd 16550 Serials, Enhanced Parallel, onboard 2.88MB Floppy interface
- ○16MB 70ns 72Pin SIMM RAM (8MB x 2pcs)
- ○1.44M TEAC Floppy Drive
- ○Seagate 2.1GB Fast Wide SCSI-2 68Pin ST12550W HD
- ○Diamond Viper SE PCI Weitek P9100 2MB VRAM
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UMiracle 486 Green ISA VLB

READY TO GO

○ *486 ISA VLB 256K Cache EPA Green Motherboard*
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33SX-$977
40DX-$1044
50DX2-$1082
66DX2-$1091
100DX4-$1526

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Dare to Compare

[illegible]

- Processor	45.75
- Video	5330.00
- Disk	1198.00
DOSMark	727.87
Graphics WinMark	9.57
Disk WinMark	867

Test result based on our 66MHz system. See your PC Magazine for comparsion.

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AIR 486 ISA VLB - MIS-Line

READY TO GO

○ *486 AIR-MIS ISA VLB 256K Cache Motherboard*
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○ *1.44M TEAC Floppy Drive*
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○ *S3-805 VLB 1MB Windows Accelerator*
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33SX-$1134
40DX-$1201
50DX2-$1239
66DX2-$1248
100DX4-$1683

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Dare to Compare

[illegible]

- Processor	45.56
- Video	4687
- Disk	1319
DOSMark	733.72
Graphics WinMark	10.7
Disk WinMark	1090
WinStone	51.7

Test result based on our 66MHz system w/16MB. See your PC Magazine for comparsion.

UMiracle 486 PCI/VLB

READY TO GO

○ *486 ISA PCI/VLB 256K Cache Green Motherboard*
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○ *1.44M TEAC Floppy Drive*
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○ *Diamond Stealth 32 PCI 2MB Accelerator*
○ *14" 1024X768NI 0.28DP Green Monitor*
○ *Premium Digital Mini Tower 230W PS*
○ *Honeywell 101 Enhanced Keyboard*

50DX2-$1277
66DX2-$1286
100DX4-$1691

UMiracle

Dare to Compare

[illegible]

- Processor	38.70
- Video	4314.47
- Disk	1192.00
DOSMark	635.87
Graphics WinMark	12.00
Disk WinMark	923

Test result based on our 66MHz system. See your PC Magazine for comparsion.

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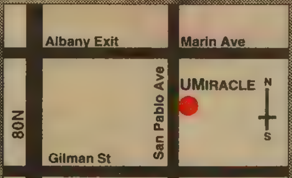

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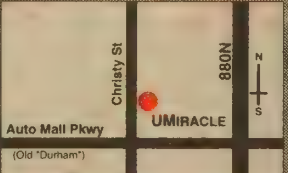

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486 AIR-MI ISA VLB 256K - 3 VLB slots, Upto 128MB by 72Pin, ZIF, P5 OD support, Bus-master, VLB IDE, FD, 2S/P/G, Power Saving Mgmt, U.S.Quality	$165
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Adaptec 2940 PCI Fast PCI SCSI-2 with Kit	$270
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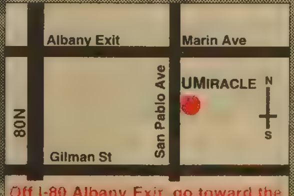

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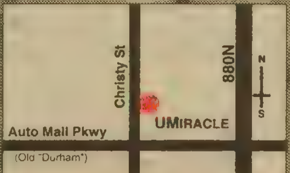

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Continued from page 298

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La Cantina. (415)341-7566. 24 hrs., 14,400. Aminet and Fish CDs, gigs of Amiga files, and support. Free. [Exp. #129.]

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The MIDI & Multimedia Exchange BBS. (415)771-1788. 8-N-1, .MID, .MOD, .WAV, and virtual reality. Sysop: Walt Perko. [Exp. #128.]

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You can update or renew your listings at any time. If yours is missing, send your listing information to:

US Mail should go to: MicroTimes User Group, 3470 Buskirk Ave., Pleasant Hill, CA 94523. **Faxes** are welcome at (510)934-3958. **Email** can be sent to: microx@well.sf.ca.us, or MCI:MICROTIMES.

BBS Spotlight cont.

Governor's Race Online?

At this writing, only Kathleen Brown's campaign has an email address (katbrown@netcom.com), an auto-reply mail server. Retrieve an index of keywords by sending email with "send index" or "send info" in the subject line. These files are also available via ftp on the ftp server at ftp.netcom.com in the directory /pub/katbrown, as is the list of file names. You can then use "send <filename>" in the subject line of email addressed to katbrown@netcom.com to retrieve files by auto-reply.

There are rumors that Governor Pete Wilson and Senator Dianne Feinstein are also going to be providing information over the net, but at this writing nothing has appeared. There's no word at all regarding any potential plans by Senate candidate Michael Huffington.

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Hungry Net surfers who want to order their lobsters, or want to take a look at Roy's Lobster Shack and a rare blue lobster photograph, are invited to the OBS Mosaic menu (http://marketplace.com/0/obs/obshome.html). OBS can also be reached by gopher (gopher marketplace.com), and by email (obs@marketplace.com).

One hardly knows what to say. ■

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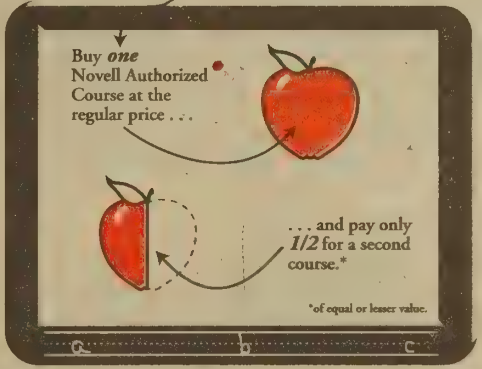

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San Francisco PC Users Group BBS. (415)621-2609. 8-N-1, 24 hrs., 1200–14,400. Sysop: Richard Couture. [Exp. #128.]

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510

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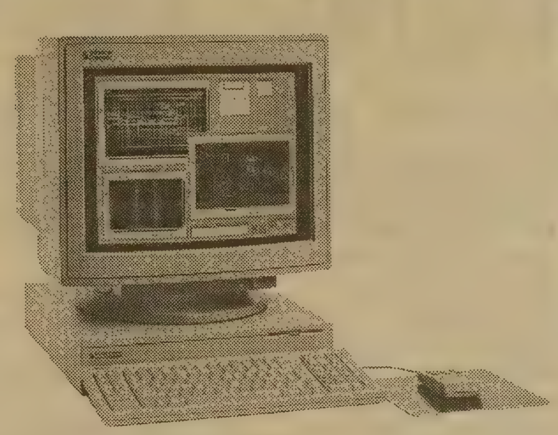

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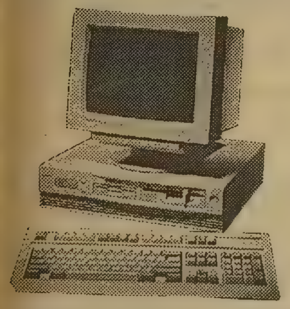

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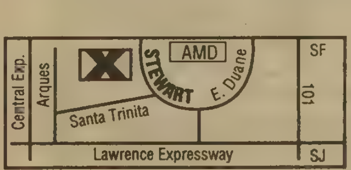

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USER GROUPS

AMIGA

AGA. Meetings: 7th of each month, 7:00 pm, downtown SF. Graphics users group for all Amiga users of 2-D, 3-D, animation, multimedia, and video software. Call: Ollie, (415)863-8792. [Exp. #130.]

AUM—Amiga Users Of Marin. Meetings: 3rd Wed., 7:30 pm, College of Marin Science Center, Rm. 191, Kentfield. Desktop Video SIG, Rm. 192, 6:00 pm. Call: (415)479-6717. BBS: (415)459-6621. [Exp. #132.]

AWEST Amiga Users In SF. Meetings: 2nd Wed., 6:30 pm, Excelsior Branch Public Library, 4400 Mission St. (near Ocean), San Francisco. Call: (415)584-8406. [Exp. #132.]

FAUG—First Amiga User's Group. Meetings: 1st Tues., 7:30 pm, HT Electronics, 275 N. Mathilda Ave., Sunnyvale. Q&A, new product demos, public domain software. Call: Mike Fischer, (415)855-9816, BBS (415)341-7566. [Exp. #129.]

RE-AMIGA Redwood Empire Amiga User Group. Meetings: 2nd Tues., 7:30 pm, Rohnert Park Jr. HS, Rm. C-5, 7165 Burton Ave., Rohnert Park. Call: (707)523-9978. BBS: (707)539-6944. [Exp. #132.]

TOGA—The Other Group Of Amigoids. Meetings: Varying Sat., 12:30 pm, Milpitas Community Library, 40 N. Milpitas Blvd., Milpitas. An informal group to share ideas, PD software, and information. Call: Lawrence Brown, (408)984-6036; Randy Abel, (408)356-9405; toga@cup.portal.com . [Exp. #132.]

Winner's Circle. Meetings: 2nd Wed., Berkeley. Demo new products, chat with other Amiga users. Call: Jack, (510)845-4814; BBS, (510)845-4812. [Exp. #132.]

APPLE

Gravenstein Apple Users. Meetings: 3rd Sat., 10:00 am, Grant School, 200 Grant Ave., Rm. #B4, Petaluma. Call: BBS (707)794-9333, Jack McKenna sysop. [Exp. #129.]

PAUG—Peninsula Apple User Group. Meetings: 3rd Thurs., 7:00 pm, Ampex Cafeteria, 411 Broadway, Redwood City. Beginners and advanced, Q&A, new product demos, public domain software. Call: Kent Fillmore, (415)571-1433. [Exp. #131.]

P.I.E. Apple IIGS SIG. Meetings: 3rd Tues., 7:00 pm, Wilcox High School, Rm. #205, 3250 Monroe St., Santa Clara. Call: Philip Fontaine, (408)258-7641. [Exp. #129.]

San Leandro Apple Eaters Users Group. Meetings: 1st Thurs., 7:30 pm, San Leandro High School, Rm. #204, 2200 Bancroft Ave., San Leandro. Call: Stan (510)351-3973 or Ed (510)651-8521. [Exp. #129.]

SPC Apple User Group. Meetings: 2nd Tues., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to Apple Computers Users Group supports all Apple and Macintosh computers. Call: Dean Fearn, (510)881-9160. [Exp. #129.]

Stockton Apple Users. Meetings: 3rd Wed., 7:00 pm, Online Connecting Point Computer Store, 5756 Pacific Ave., Stockton. Call: Connie Fodor, (209)474-8508. [Exp. #129.]

Tri-Valley Apple Users. Meetings: 1st Wed., 7:00 pm, Glendale Federal Bank, 3101 Crow Canyon Place, San Ramon. Call: Jerry Carleton, (510)828-6237. [Exp. #129.]

ATARI

ABACUS—Atari Bay Area Computer Users Society. Meetings: 1st Sat. 12:00 noon, Potrero Branch Public Library, 2nd floor, 1616 20th St., San Francisco. DTP/MIDI/Video games SIGs. Call: Roger Sinasohn, (415)469-7924. [Exp. #129.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm, San Leandro Main Library, Estudillo Room, 300 Estudillo Ave. 8/16/32-bit, SIGs. Call: Robbie, (510)797-5636. [Exp. #131.]

AT&T

AT&T Computer Users Group. Meetings: 1st Wed., 7:00 pm, 50 Fremont St., 40th Floor—near 1st and Mission, San Francisco. Call: Jim Lansing, (415)885-6631 or Joe Mahoney, (415)584-6510. [Exp. #129.]

CAD

BMUG CAD SIG. Meetings: Last Weds., 6:00 pm, Academy of Art College, 79 New Montgomery, San Francisco. Environmental design/drafting. Call: (510)549-BMUG. [Exp. #132.]

MAUG—Marin AutoCAD Users Group. Meetings: 1st Thurs., 6:30 pm, Autodesk, 4000 Civic Ctr. Dr., Training Rm. 91180, San Rafael. Call: Priscilla Mills, (415)453-4480. [Exp. #132.]

Sonoma County AutoCAD Users Group. Meetings: 3rd Tues., 6:30 pm. Call: John Weitzel, (707)525-8147. [Exp. #130.]

COMMODORE

C=HUG (Commodore Hayward User Group). Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park. (510)531-3734. [Exp. #132.]

COW—Commodore Owner's Workshop. Meetings: 3rd Thurs., 7:00 pm, San Bruno. Demos and assistance for all Amiga users. Call: Steve Beale, (415)355-8927; BBS, (415)359-5975. [Exp. #132.]

Diablo Valley Commodore Users Group. Meetings: 3rd Thurs., 7:00 pm, Contra Costa Water District Anteroom, 1331 Concord Ave., Concord. Call: (510)689-3224. [Exp. #132.]

DEC

BayLUG. Digital Equipment Computer User's Society Local User Group. For users of DEC and other hardware. Call: Rich Taylor, (408)776-4978. [Exp. #127.]

DESKTOP PUBLISHING

BMUG Desktop Publishing And Design SIG. Meetings: 3rd. Tues., 6:30, S.F. Police Academy, 350 Amber, San Francisco. Call: Les Cowan, (415)641-6033. [Exp. #132.]

ELECTRONIC PHOTO-IMAGING

EPUG—Electronic Photo-Imaging User's Group. Meetings: 3rd Friday, 7:00 pm, Ewert's Photo-Scientific, 2090 Duane Ave., Santa Clara. Call: Rik Franz or Jerry Chapman, (408)727-3686. [Exp. #128.]

IBM AND COMPATIBLES

BAYTALK. Meetings: 3rd Tues., 6:00 pm, Sun Peking Restaurant, 2068 Center St., Berkeley. For low-vision and other disabled persons; learn about adaptive technology and develop computer skills. Call: (415)777-4777. [Exp. #131.]

EastBay FOG. Meetings: 2nd Wed., 7:30 pm, Episcopal Church of St. John-in-Montclair, 1707 Gouldin Rd., Montclair. All microcomputers, MS-DOS, CP/M. Call: (510)653-2627. [Exp. #132.]

F.U.N. PC Users Group. Meetings: 2nd Tues., 6:00 pm, SyQuest Technology, 47071 Bayside Pkwy. (corner Gateway Blvd.), Fremont. Visitors welcome, no experience necessary. Call: (510)795-4286 #8. [Exp. #129.]

Golden Gate Computer Society. Meetings: 4th Mon., 7:00 pm, San Rafael Community Center, 618 B St., San Rafael. Free intro to computers class at 6:00 pm. Call: (415)454-5556. [Exp. #132.]

Napa Valley PC Users Group. Meetings: 2nd Wed., 7:30 pm, Napa High School Lecture Hall, 2475 Jefferson St., Napa. Call: Lee Schwab,

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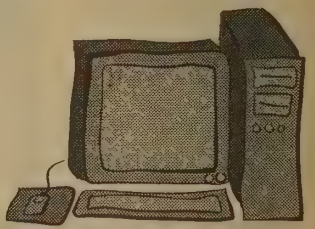

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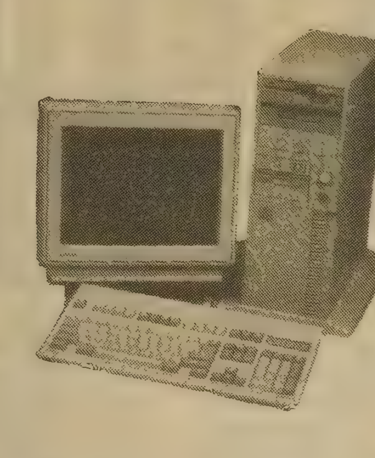

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USER GROUPS cont.

(707)257-2675. [Exp. #130.]

NaSPA Bay Area Chapter. Meetings: Last Tues. of odd-numbered months, 3131 Zanker (near First and Montague), San Jose. Technical aspects of corporate computing with emphasis on IBM and compatible mainframes. Call: Radi Shourbaji, (408)526-3258. [Exp. #131.]

OS/2 BAUG Enterprise Computing SIG. Meetings: 3rd Mon., 7:00 pm, IBM, 425 Market St., 22nd floor, San Francisco. Call: Larry Baptist, (510)675-2466. [Exp. #129.]

PC Clubhouse. Meetings: 1st Fri., 8:00 pm, Meiklejohn Hall, Room 2002, CSU Hayward. To share knowledge and PD/shareware software; maintains network of BBSes; mentor assistance; SIGs. Call: (510)538-2449. [Exp. #132.]

San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm. 110 Pacific #153, San Francisco. For those who use computers in business. Visitors $10. Call: Jordan Rosenberg, (415)788-5338. MCI Mail: 425-1545. [Exp. #132.]

San Francisco Computer Society. Meetings: 4th Mon., 7:00 pm, Presbyterian Church, 1329 7th Ave., San Francisco. CPM and DOS. Call: Bob Forsberg, (415)885-6202. [Exp. #130.]

San Francisco PC Users Group. Meetings: 3rd Tues., 6:15 pm SIGs, 7:30 pm General Meeting. St. Mary's Conference Center, 1111 Gough St., San Francisco. Call: (415)346-2644, events; Kendall Callas, (415)821-1310; Loyd Cribs, (415)751-5219. [Exp. #132.]

SEF Business Operations SIG. Meetings: 1st Tues. every other month, 7:00 pm, Center for Software Development, 111 W. St. John St., Ste. 200, San Jose. A special interest group of the Software Entrepreneurs' Forum. Call: Mike Schmit, (408)244-6826. [Exp. #131.]

SEF International Software SIG. Meetings: 3rd Mon., 7:00 pm, Center for Software Development, 111 W. St. John St., Ste. 200, San Jose. A special interest group of the Software Entrepreneurs' Forum. Call: Charlie Pfefferkorn, (408)923-7570. [Exp. #131.]

South Bay WordPerfect User Group. Meetings: 4th Tues. (no Dec. meeting), Saratoga Community Library, Fruitvale and Saratoga Ave., Saratoga. Free. Call: Scott Maiden, (408)253-4591. [Exp. #131.]

Stanford Palo Alto Area PC User Group. Meetings: Last Wed., 7:30 pm, Varian Auditorium, 3075 Hansen Way (off Page Mil Road), Palo Alto. Call: (415)329-8252. [Exp. #131.]

INTERNET

BMUG Beginning Internet SIG. Meetings: 1st and 3rd Mon., 7:00 pm, BMUG office, 2055 Center St., Berkeley. How to connect and what to do once you're connected. Call: Noah, (510)549-2684 ex. 217. [Exp. #132.]

BMUG GUI Internet SIG. Meetings: 2nd and 4th Weds., 7:00 pm, BMUG office, 2055 Center St., Berkeley. Accessing the Internet through World Wide Web using the Macintosh. Email: dan_meriwether or susan_adrian @bmug.org . [Exp. #132.]

LEGAL

BMUG Law SIG. Meetings: 2nd Weds., 6:00 pm, Nossaman, Guthner, Knox & Elliot, 50 California St., 34th floor, San Francisco. Call: Tim, (408)945-0282. [Exp. #132.]

BMUG Law SIG South. Meetings: 1st Tues., 6:00 pm, 2077 Gateway Pl., 1st. floor, Red conf. room, San Jose. Call: Tim, (408)945-0282. [Exp. #132.]

SF Bar Assoc. WordPerfect User Group. Meetings: 3rd Wed., odd-numbered months, noon, SF Bar Assoc. Boardroom, 7th Fl., 685 Market St. Brown bag meetings. Call: (415)421-5650. [Exp. #132.]

MACINTOSH

Association Of A32 Users. Meetings: 2nd Sat., 10:00 am, Sunnyvale Community Center Arboretum, 550 E. Remington Ave. (near corner of El Camino and Fair Oaks). Q&A session; guest speakers and vendor demonstrations; shareware, freeware, and PD software disks. Call: (408)263-0398. [Exp. #130.]

BMUG—Berkeley Macintosh User Group. Meetings: Every Thurs., 6:00 pm, Warren Hall, Rm. 22, UC Berkeley campus. Call: (510)549-BMUG. [Exp. #132.]

BMUG LesBiGay SIG. Meetings: 3rd Sun., 6:00 pm, BMUG office, 2055 Center St., Berkeley. Call: see the LesBiGay conference on Planet BMUG (bmug.org). [Exp. #132.]

BMUG West. Meetings: Last Mon., 6:30 pm, San Francisco Exploratorium. Call: (510)549-BMUG. [Exp. #132.]

Diablo Valley Macintosh User Group (DVMUG). Meetings: 3rd Tues., 7:00 pm, Bancroft School, 2200 Parish Dr., Walnut Creek. Get together with Mac and Performa users. Enjoyable SIG meetings. Call: (510)827-5775. [Exp. #128.]

International Macintosh Users Group (IMUG). Meetings: 3rd Thurs., 7:00 pm. A forum for multilingual/multiscript computing. Call: Roger Sherman, (415)859-5146. [Exp. #132.]

PAUG—Peninsula Apple User Group. Meetings: 3rd Thurs., 7:00 pm, Ampex Cafeteria, 411 Broadway, Redwood City. Beginners and advanced, Q&A, new product demos, public domain software. Call: Kent Fillmore, (415)571-1433. [Exp. #131.]

SEF Macintosh SIG. Meetings: 3rd Tues., 7:00 pm (next meeting Sept. 20), Apple R&D Bldg. 4 Town Hall Auditorium, 4 Infinite Loop, Cupertino. Sponsored by Software Entrepreneurs' Forum. Call: Jeff Cherniss, (408)358-5150. [Exp. #131.]

Sequoia Macintosh Users' Group—SMUG. Meetings: 2nd week, 7:00 pm, Founders Hall, Rm. 118, Humbolt State University, Arcata. Call: (707)442-3520. [Exp. #127.]

SPC Apple User Group. Meetings: 2nd Tues., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to Apple Computers Users Group supports all Apple and Macintosh computers. Call: Dean Fearn, (510)881-9160. [Exp. #129.]

MARKETING

SEF Marketing SIG. Meetings: 4th Thurs., 7:00 pm, Cubberley Community Center, Rm. H-1, 4000 Middlefield Rd., Palo Alto. A special interest group of the Software Entrepreneurs' Forum. Call: Bill Ryan, (415)615-7906. [Exp. #131.]

MULTIMEDIA

Desktop Video User Group. Now forming in El Cerrito.

BULLETIN BOARDS cont.

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The Eye Candy Store BBS. (510)235-4807. 24 hrs., 2400–14,400. Adult BBS, no one under 18, low fee, instant access. [Exp. #128.]

The Full Moon BBS. (510)427-6956, 432-0810. 2400–14,400. Shareware, games, online games, adult, msg. bases. Soon adding NetMail. Sysops: Cruzdude and Dave Eklove. [Exp. #128.]

Gold Diggers BBS. (510)568-7807,,,23,23 (must include ,,,23,23 to get BBS). 24 hrs., 2400–14,400. IBM, Atari ST, Amiga, Mac; files, door games, and messages. Donation $10 per year. Sysop: Harry Goldberg. [Exp. #127.]

Highway Access BBS. (510)865-6400, 865-6401. 8-N-1, 24 hrs., 14,400. 3.0GB of OS/2, DOS, and Windows shareware. FidoNet, Internet soon. Free. Sysop: Paul Benn. [Exp. #129.]

Infinite Beginnings BBS. (510)785-7018. 8-N-1, 24 hrs., 14,400. 5000+ files, 50+ online games, 50+ msg. conferences. Free. [Exp. #128.]

Initiative BBS. (510)654-2253. 8-N-1, 24 hrs., 300–14,400. Political board, documents/discussions on future of socialism in the world. Sysop: Steve Willett. [Exp. #127.]

Last Chance BBS. (510)796-1378. Apple-based files, msgs., and games. [Exp. #128.]

LightWaved 3D BBS. (510)235-4707. 24 hrs., 2400–14,400. All Amiga 3D, objects, textures, tips, and tricks. [Exp. #128.]

The Lost Worlds BBS. (510)888-1714. 24 hrs., 14,400. Hottest adult, shareware, chat, games, Internet, Usenet, Fido, msgs. [Exp. #127.]

LZ Nightline BBS. (510)834-0837. Nationwide veterans msg. conference echoes, vet info and support, non-vets welcome. Limited free access. Sysop: Jon Mankowski. [Exp. #127.]

Maddog BBS. (510)483-0203. 24 hrs., 2400–14,400. Running 10 CD-ROMs, online games, FidoNet, HotNet, sports echos, fun, tons of files. Sysop: Troy Earp. [Exp. #128.]

Maximum Capacity. (510)886-9512. 8-N-1, 14,400. Files for download, file retrieval service, messages. [Exp. #128.]

The Mission BBS. (510)353-9201. 24 hrs., 14,400. Home of creator of the Amiga: the late Jay Minor. Sysop: Gary Chow. [Exp. #129.]

M.O.P.H. BBS. (510)834-5517. Veterans service organization listings and community events. Free. Sysop: Mike Dornner. [Exp. #127.]

The Phantom Zone BBS. (510)538-9586. 8-N-1, 24 hrs., 300–14,400. Three lines. Online games, echomail, offline mail reader, multinode, friendly sysop. [Exp. #128.]

Planet Mirth. (510)786-6560. 14,400. Sinfully silly, Internet news, NIRVANAnet. [Exp. #129.]

The Punk's Paradise. (510)373-6707. 24 hrs., 28,800. Adult section, great files. Free access. Sysop: Dr. Frank. [Exp. #129.]

realitycheck. (510)527-1662. 14,400. Instant access, coffee, cigars, tech, and text. NIRVANAnet. [Exp. #129.]

The Reflection Nebula. (510)253-9311. 28,800. Two lines. A superior Macintosh BBS, 1.2GB HD, USR modems. [Exp. #129.]

Smoke And Mirrors BBS. (510)614-3358. 24 hrs., 14,400+. RIP and ANSI oriented board, MIDNET, GASPNET, 1.5GB of GIFs, fast growing. Sysop: James Foley. [Exp. #128.]

Smorgasbord BBS. (510)440-1125. 2400–28,800. Four lines. Fremont, Sunnyvale, Milpitas. 75,000 files, Internet. Free prize draw. [Exp. #128.]

Starbase 13 BBS. (510)278-3926. 24 hrs., 14,400. FidoNet and many other nets, 1+GB of files, friendly sysop. Sysop: Bootmacker. [Exp. #129.]

StarPort Valhalla. (510)522-3583. 8-N-1, 24 hrs., 1200–14,400. Nine networks, online games, five CDs/1GB HD for downloading, adult, sci-fi. Free. [Exp. #128.]

Tiger Team Buddhist Information Network. (510)268-0102. 24 hrs., 14,400. "America's Buddhist online service." Internet email, Usenet, gigabytes of files, online shopping. Sysops: Gary Ray & Jeff Macko. [Exp. #127.]

VA Listings. (510)637-1261. 24 hrs., 300–9600. Multiline. VA-owned homes for sale. Sysop: David Piersall. [Exp. #127.]

The VisualAge BBS. (510)685-9585. 8-N-1, 14,400. Two lines. General interest, echomail and Internet email soon, many files for download. Sysop: David R. Afana. [Exp. #129.]

Winner's Circle. (510)845-4812. 24 hrs., 14,400. Supporting the Amiga in Berkeley. Free. [Exp. #129.]

Wishing Well BBS. (510)745-7901. 1200/14,400. 85+ online games, quality files, ANSI art, RIP graphics, matchmaker, and more. Sysop: MaryLou White [Exp. #128.]

707

Games People Play BBS. (707)746-6873. 2400–14,400. Games, Windows, and doors. Immediate access to files. Free. [Exp. #127.]

The Party Line BBS. (707)588-8055. 2400–14,400. 12 lines. Internet email, Usenet, RIP graphics, nightly chat link. Free trial. Sysop: Jami Chism. [Exp. #128.]

Threat Management Institute BBS. (707)935-1713. 8-N-1, 24 hrs., 1200–14,400. Personal defense, firearms, firearms law, schedule of TMI classes and events. Free. Sysop: Paul Theodoropoulos. [Exp. #128.]

The WINd Tunnel BBS. (707)421-0380. 24 hrs., 2400–14,400. Great source for Windows programs, large collection of DOOM files. Free and fee. Sysop: John Wright. [Exp. #127.]

916

24th Street Exchange. (916)448-2483. 8-N-1, 24 hrs., up to 28,800. 38 lines, 21 CDs, FidoNet, USA Today, PC catalog, Internet email, chat. [Exp. #128.]

Pacific Exchange (Major) BBS. (916)965-0301. 8-N-1, 24 hrs., 2400–14,400. Eight lines. 35,000 files, 5GB, adult files, look for the Free stuff. $25/year. Sysop: Richard Dubois. [Exp. #128.]

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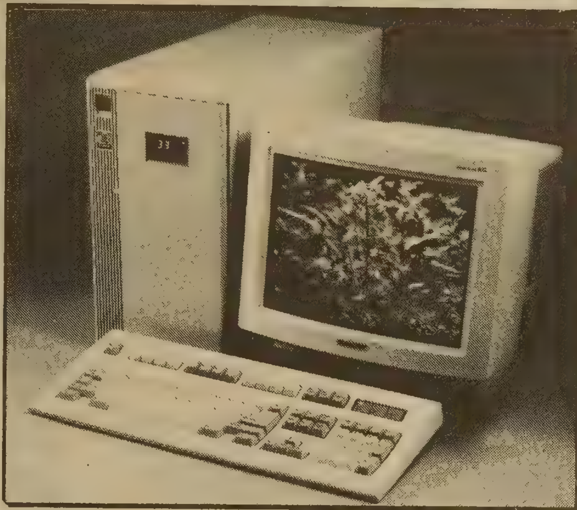

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USER GROUPS cont.

Call: (510)528-9895. [Exp. #130.]

SEF Multimedia SIG. Meetings: 1st Thurs., 7:00 pm, Center for Software Development, 111 W. St. John St., Suite 200, Downtown San Jose. SIG of Software Entrepreneurs' Forum. Call: Ralph Gilman, (408)746-0551. [Exp. #131.]

NETWORKING

BMUG Networking SIG. Meetings: 4th Tues., 7:00 pm, BMUG office, 2055 Center St., Berkeley. Call: James, (510)233-7151. [Exp. #132.]

NOVELL

Diablo Valley NetWare Users Group. Meetings: 3rd Tues., 6:00 pm, Terraces building, 2300 Contra Costa Blvd., Conference Room, Pleasant Hill. Call: Leslie or Tom, (510)825-3275. [Exp. #129.]

Silicon Valley NetWare Users Group. Meetings: 3rd Wed., 6:30 pm, Sundowner Inn, Sunnyvale. Call: (408)954-0585, x590. [Exp. #130.]

OS/2

OS/2 Bay Area User Group. Meetings: 4th Mon., 7:00 pm. For anyone interested in OS/2. Presentations, product demos, questions and answers. Call: (415)755-3124. [Exp. #129.]

OS/2 Developers SIG. Meetings: 2nd Mon., 7:00 pm, IBM, 1055 Joaquin Rd., Mountain View. Call: (510)945-7565. [Exp. #129.]

PARADOX

bapals (Bay Area Paradox User Group). Meetings: 4th Tues., 5:00 pm, McKesson Building, 1 Post St., 18th Fl., San Francisco. Call: (415)995-4688. [Exp. #131.]

PEN

SEF Pen/Mobile Computing SIG. Meetings: 4th Wed., 7:00 pm, Cubberley Community Center, Rm. H-1, 4000 Middlefield Rd., Palo Alto. A special interest group of the Software Entrepreneurs' Forum. Call: Bill McAlpine, (415)348-2257. [Exp. #131.]

PROGRAMMING LANGUAGES

BMUG Forth SIG. Meetings: 2nd Sat., 12:00 pm, BMUG office, 2055 Center St., Berkeley. Forth for beginners, 12 noon; introductions, 1:00 pm; talks and demos 1:30–5:00 pm. Call: Leonard, (510)376-5241. [Exp. #132.]

BMUG Programmers' SIG. Meetings: alternate Weds., 7:00 pm, BMUG office, 2055 Center St., Berkeley. Mac Toolbox, C, and Pascal. Call: (510)549-BMUG. [Exp. #132.]

Forth Interest Group, North Bay Chapter. Meetings: 2nd Sat., 1–5 pm, tutorial at noon; 2055 Center St., Berkeley. Call: Leonard Morgenstern, (510)376-5241. [Exp. #130.]

SEF Intelligent Systems SIG. Meetings: 2nd Mon., 7:00 pm, Center for Software Development, 111 W. St. John St., Ste. 200, San Jose. A special interest group of the Software Entrepreneurs' Forum. Call: Leor Jacob, (415)595-5200. [Exp. #131.]

SEF Visual BASIC SIG. Meetings: 2nd Thurs., 7:00 pm, Cubberley Community Center, 4000 Middlefield Rd., Rm. H-1, Palo Alto. Sponsored by Software Entrepreneurs' Forum. Call: Allan Colby, (415)851-4567. [Exp. #131.]

Silicon Valley Forth Interest Group. Meetings: 4th Sat., 10:00 am–5:00 pm, 230 Lincoln Centre Dr., Foster City. Call: Dr. C.H. Ting, (415)638-5669 (w), 571-7639 (h). [Exp. #132.]

PROJECT MANAGEMENT

Microsoft Project Users Group. Meetings: 3rd Tues., alternates between San Jose and Foster City. Q&A, speakers, product demos, and other topics related to Microsoft Project and project management. Call: Jim Spiller, (707)425-2484. [Exp. #131.]

TEXAS INSTRUMENTS

TI-99/4A. Meetings: 2nd Sat., Oakland. Call: Fred, (510)530-8335. [Exp. #128.]

UNIX

AT&T UNIX Computer Users Group. Meetings: 4th Wed., 6:30 pm, Location varies. Call: Thad Floyran, (408)985-7100 or Usenet: thad@cup.portal.com [Exp. #129.]

International Linux Association. Meetings: 3rd Mon., 7:00 pm, International House of Pancakes, 5403 Stevens Creek Blvd. (off I-280 Lawrence Expwy. South, next to Howard Johnson Hotel), Santa Clara. Learn/use UNIX, X-Windows, Internet through Linux. See Linux change the computing world. Call: (408)369-9818, email alte@rahul.net . [Exp. #130.]

SEF UniForum Open Systems SIG. Meetings: 2nd Tues., 7:00 pm, DEC Auditorium, 130 Lytton Ave., Palo Alto. A special interest group of the Software Entrepreneurs' Forum. Call: Priscilla Rowe, (415)546-4950. [Exp. #131.]

VIDEO TOASTER

Bay Area Video Toaster Users Group. Meetings: 4th Tues., 7:00 pm, Richmond Public Library, Whittlesey Room, 325 Civic Center Plaza, Richmond. Product demos, guests, info, tips, and much more. Call: Don Smith, (510)620-6759. [Exp. #131.]

Silicon Valley Video Toaster Users Group. Meetings: Last Thurs., 7:00 pm, HT Electronics, 275 N. Mathilda Ave., Sunnyvale. Special guests, equipment demos, hands-on workshops, info/tips on Toaster 4000 and System 3.1. Call: Andrew Timmins, (408)243-9233 (eve.). [Exp. #131.]

WINDOWS

BMUG Windows SIG. Meetings: 1st Tues., 6:30 pm, BMUG office, 2055 Center St., Berkeley. Call: Robin, (510)527-8993. [Exp. #132.]

SEF Windows SIG. Meetings: 1st Wed., 6:30 pm, Cubberley Community Center, Room H-1, 4000 Middlefield Rd., Palo Alto. SIG of the Software Entrepreneurs' Forum. $10 for nonmembers. Call: Fran Finnegan, (415)288-4400. [Exp. #132.]

WIRELESS

SEF Wireless SIG. Meetings: 1st Mon., 7:00 pm, Center for Software Development, 111 W. St. John St., Ste. 200, San Jose. A special interest group of the Software Entrepreneurs' Forum. Call: Patrick Glenn, (408)448-3844. [Exp. #131.]

ASSOCIATIONS

American Association For Artificial Intelligence. A technical society for those interested in Artificial Intelligence. 445 Burgess Dr., Menlo Park. Call: (415)328-3123, fax: (415)321-4457, email: membership@aaai.org or info@aaai.org . [Exp. #132.]

The Assembler Multitude. Meetings: every 3rd week on Mon., 7:30 pm, University Lutheran Church, 1611 Stanford Ave., Palo Alto. An open discussion of new technical developments in many fields and how they relate to nanotechnology. Call: (408)974-6241. [Exp. #132.]

Association For Women In Computing. Meetings: 1st Wed., 6:00 pm, Sinbad's Restaurant, Pier 2, San Francisco Embarcadero. $15 members, $20 guests. Call: (415)979-8450. [Exp. #131.]

Bay Area Sysop Alliance. Meetings: monthly. Help and information for Bay Area BBS systems. To get a BASA notice every month send a message to Jeff Hunter at jhunter@netcom.com with your Internet address, or send your FidoNet address to Jeff Hunter @ 1:161/211. [Exp. #132.]

Bay Area Video Coalition. A place for independent videomakers to communicate with each other and the larger media community. $10 for nonmembers. Call: Anne Etheridge, (415)861-3282. [Exp. #128.]

Black Data Processing Associates, Silicon Valley Chapter. Meetings: 4th Thursday, 6:30 pm, Amdahl Corp., Bldg. H, 1240 E. Arques Ave., Sunnyvale. National network of DP professionals, educators, students, and vendor reps. Call: Willie Mackey, (408)280-7624. [Exp. #128.]

Business Marketing Association. Meetings: 4th Wed., 11:30 am, Marriott Hotel on Great America Pkwy., Santa Clara. A professional organization for business-to-business marketing professionals; CBC certification, topical programs, seminars, job bank. Call: (408)365-9815. [Exp. #131.]

Center For Software Development. 111 West Saint John, Ste. 200, San Jose. A nonprofit corporation whose goal is to help software businesses grow and bring better products to market more rapidly. Call: (408)494-8378. [Exp. #131.]

Computer Professionals For Social Responsibility/Berkeley Chapter. Meetings: last Sun., 2:00 pm, BMUG Offices, 2055 Center St., Berkeley. Meetings are open to the public and free. Call: (510)987-0567 or cpsr-berkeley@cpsr.org . [Exp. #130.]

Electronic Personal Memory Organizer Development Society. Meetings: 2nd and 4th Tues., 7:40 pm, Mr. Q's, 25 Main St., Tiburon. Free introductory exchange for electronics engineers and all interested parties. Call: Wizard's Workshop, (415)833-9122. [Exp. #132.]

Foresight Institute. Meetings: 123 Fremont Ave., Los Altos. Information about and discussion of nanotechnology and other anticipated technologies. $35 annual membership. Call: (415)917-1122. [Exp. #130.]

Historical Computer Society. 10928 Ted Williams Pl., El Paso, TX 79934. A nostalgia group for enthusiasts of older computers and their history. Main forum is *Historically Brewed* newsletter; $18/yr., $3 sample. Call: David A. Greelish, (915)822-2683. [Exp. #127.]

IEEE San Francisco Computer Society. Meetings: monthly, SF State University. Call: (415)905-4400. [Exp. #132.]

Independent Computer Consultants Association, Northern California Chapter. Meetings: Dinner: 2nd Tues., 6:00 pm; Breakfast: 4th Thurs., 7:30 am; The City Club, 155 Sansome St., San Francisco. Open discussion, questions and answers. Call: (415)399-0305. [Exp. #132.]

Nanosystems Study Group. Meetings: every few months, 7:30 pm, Genentech Conference Center, Bldg. 5, South San Francisco. Call: Ted Kaehler, (408)974-6241. [Exp. #130.]

North Bay Multimedia Association. Meetings: 3rd Thurs. (but September's is on 22nd), 6:00 pm, Indian Valley Campus, Pomo Cluster, Novato (101 to Ignacio Blvd., go west into campus, park in lots 3 or 4). $10 for nonmembers, $75/year membership. Call: Sharon Rockey, (415)721-1780. [Exp. #132.]

North Bay Systems Professionals. Meetings: 3rd Wed., 6:00 pm networking, 7:00 pm dinner, 8:00 pm speaker. Embassy Suites Hotel and Conference Center, 101 McInnis Parkway, San Rafael. NBSP provides a forum for systems professionals to grow and to benefit from a network of other like professionals. Call: (415)721-4409. [Exp. #130.]

Rexx Language Association. A consortium of those who deal at some level with the Rexx language. For membership info send name and address to pjt@wrkgrp.com or RexxLA Membership, 6300 N. River Rd., Ste. 501, Rosemont, IL 60018; fax (708)696-2277. [Exp. #132.]

Robotics Society Of America. Meetings: 1st Wed., 8:00 pm, Exploratorium Library. Call: Brad Smallridge, (415)550-0588. [Exp. #128.]

Smart Valley Breakfast Talks. Meetings: 3rd Tues., 7:30 am, Anderson Consulting Center for Strategic Technology in Palo Alto. Talks focus on topics relating to the information superhighway. $5 for nonmembers. Call: (415)843-2160, email info@svi.org . [Exp. #132.]

Society For Technical Communication, San Francisco Chapter. Meetings: 3rd Wed., 6:00, program at 6:45 pm, Stagecoach Restaurant, 44 Montgomery St., San Francisco. Job listings, guest speakers, technical publications competition, newsletter. Call: (415)985-7121. [Exp. #131.]

Society For Technical Communication, Silicon Valley Chapter. Meetings: 4th Thurs. 5:30 pm refreshments, 6:30 pm dinner, 7:15 dessert. Sunnyvale Hilton, 1250 Lakeside Drive (off Lawrence Expressway at 101). Guest speakers, special interest groups, networking, job listings, newsletter. Call: (408)737-9426. [Exp. #127.]

Software Entrepreneurs' Forum. 3rd Wed., 6:30 pm, Elk's Lodge, 4249 El Camino Real, Palo Alto. Industry association dedicated to software developers and entrepreneurs, offering information and education on all facets of the software industry. Call: Barbara Cass, (415)854-7219. [Exp. #132.]

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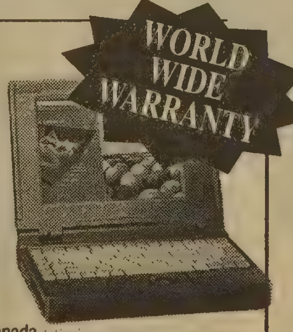

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- Intel DX2-50/DX4-75MHz CPU
- 128K Flash Bios
- 256-Color VGA Display
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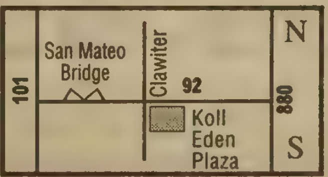

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Video:	**32-bit Local Bus** Windows Accelerator **1MB RAM** Support 1024x768 at 256 Colors
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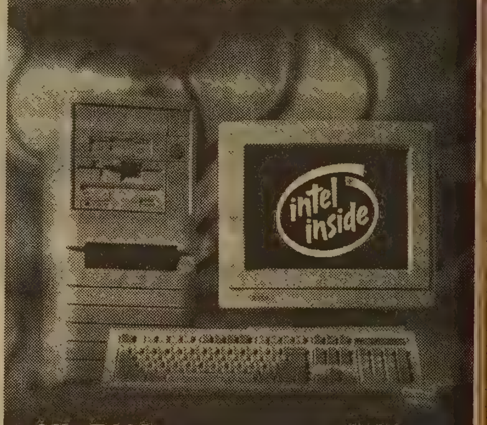

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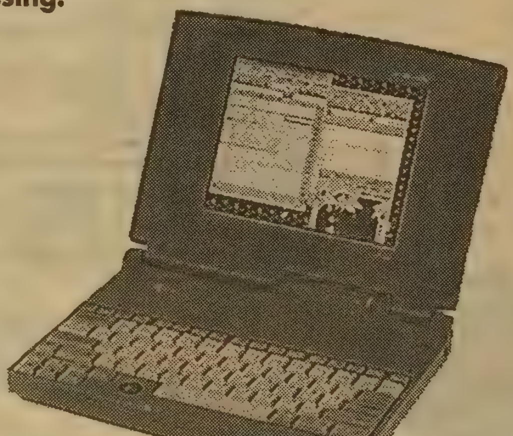

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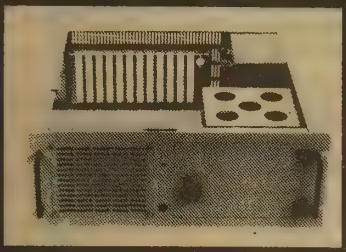

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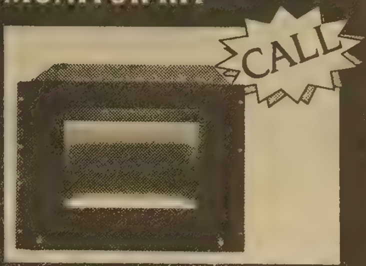

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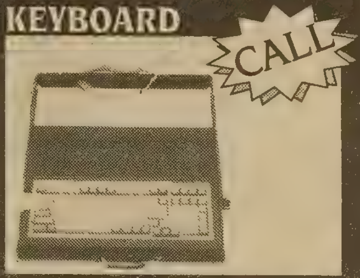

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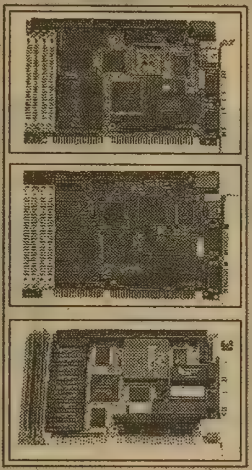

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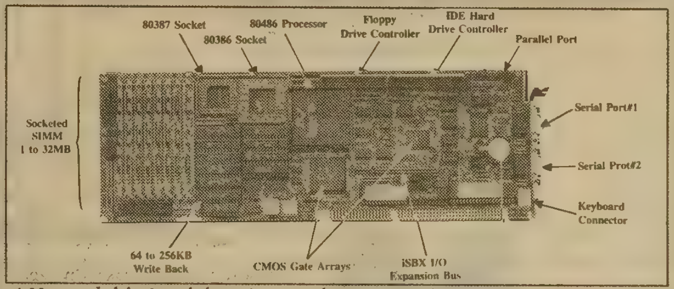

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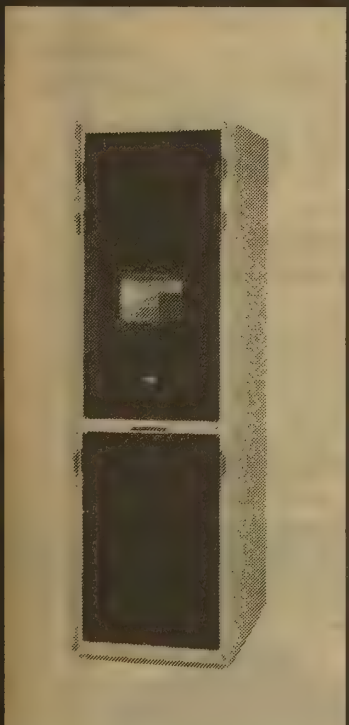

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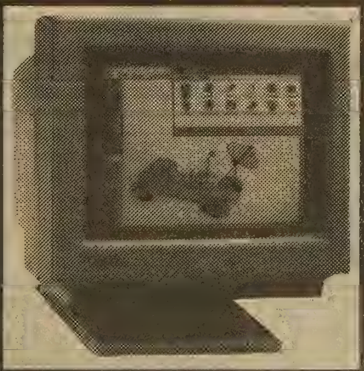

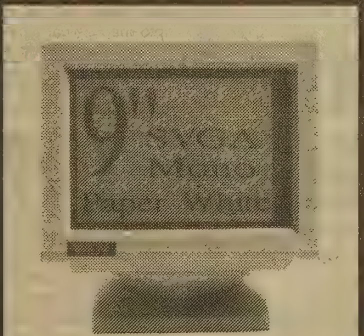

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- POWER SUPPLY 120-240V AUTO SELECTION

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HCM-423E	14" SUPER VGA .28 Dot Pitch	$228
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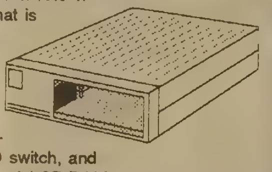
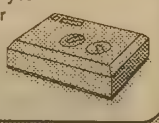
The case for external drives...



You could make a case against having external drives if your computer case has enough bays, but if it doesn't, don't make a case, buy this one! It is a 9.5" x 10.5" x 2.25" beige plastic case that is perfect for CD or hard disk drives. It features a fan-cooled 40W power supply, two external SCSI 50-pin connectors (for daisy chain installation) and internal ribbon cable, SCSI device ID switch, and audio cable for Sony-type (4-pin) CD ROM drives. All you need is an IEC power cord (not included, see item "C" to right) and a drive that needs a home! Incredible break-through price, hurry!

HSC# 14783 $39.95

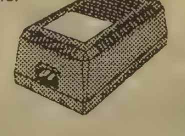
Give your Mac Vision!



With MacVision (and a video camera) your Macintosh will be able to see the outside world! Capture video stills from any composite video source (camera, VCR, video disk) and you can commit a B & W image to a disk file for editing with your paint program. New in the box unit with cables and power supply. Works with Mac II, SE or Plus, System 4.1+

HSC# 80150 $39.95

NeatBitz...



A. Handy Power Supply #1 -- Beautiful little switching power supply rated at 5VDC, 3A measures 2.75 x 3.25 x 5.25", has standard IEC receptacle for universal (100 - 250VAC, 47 - 63 Hz) input. IEC cord not included, see "C" below. Output is through 6' cord with DIN plug that may be cut off for your own plug to be installed. New in box. HSC#14996 $5.95

B. Less-Handy Power Supply #2 -- similar in appearance to "A" above, this is a linear supply rated at 12VDC @ 1200 mA, but the input is strapped for 240 VAC input. Use as is with 110VAC for lower voltage output, or open it up and re-strap it for 110VAC use. (Or inquire about our stock of foreign IEC cords to use as is with 240 VAC!) Measures 2.5 x 4 x 6.5", and will need a standard IEC cord ("C" below). HSC#14980 $5.95

C. Standard IEC Power Cord – many uses, including power supplies "A" & "B" above or drive case at left. HSC#80119 $.99

D. Network Installation Special -- Dual Terminal Kit. Contains two high-quality ten-foot RG-58 coax cables with BNC's, two BNC tee's, two BNC 50Ω terminators, one BNC coupler. Enough to cable two Thin-net stations to the wall-plate! HSC# 14967 $9.95

E. VGA to RGB Cable -- Ten foot cable has high-density 15-pin D-sub (VGA type) connector on one end, and 5 BNC connectors on the other: Red, Green, Blue, Horizontal and Vertical synch. Perfect for those high-res CAD monitors! HSC# 14963 $14.95

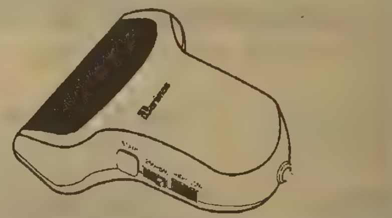
F. 19" Rack Shelf -- Very handy 5.25" tall unit allows mounting of non-flanged items in standard rack cabinets. Durable painted finish, 15" deep, very popular item! HSC# 14976 $8.95

Can Your Macintosh Read?

Don't re-type that document into your Mac...don't try to paint the Mona Lisa with your mouse...just say "Scan it!" with these handy scanners by Animas!

A. 256 Gray Scale Hand Scanner -- SCSI interface, 100 to 400 dpi, eight-bit (256 shades of gray), 4.134 inch scan path. Image enhancement software with customizable tool & filters palette, edge detection, etc. New in box with adaptors, cables, manual & software. Requires Mac SE/30 or II family, 8-bit video card, 2 MB RAM. 90-day warranty. HSC# 14808 $79.95

B. "Speed Reader" B&W Hand Scanner -- SCSI interface, 100 to 400 dpi, dithered or Black & White modes, 4.134 inch scan path. Handy for scanning halftones. line-art, etc. "MacSee" software is a simple B&W paint program for editing your images. New in box with adaptors, cables, manual & software. Use with your own OCR software (sorry, we don't have any) for text recognition. Requires Mac Classic, SE, LC, SE/30 or II family, 1 MB RAM. 90-day warranty. HSC# 14809 $49.95



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Labtec CS550 HSC#14977 $6.95

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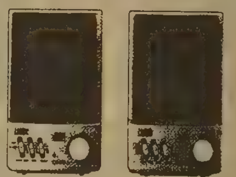

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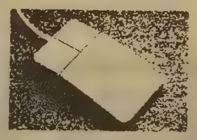
It's the return of HSC's

Giant
Anniversary
Sale!
Saturday, Sept. 17

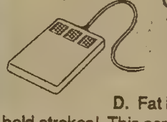
Yes, it's almost time for our End-of-Summer Blowout...and we wanted to give you plenty of notice! Set aside September 17 for a visit to one of our three stores for a one-day extravaganza of closeouts, discounts, one-of-a-kind specials and free refreshments. In addition, our Santa Clara warehouse will be featuring a parking lot sale of bulk goods at incredible prices. All in all, it's a super event you just won't want to miss...ask someone who attended last year!

Multitudes of Mice!



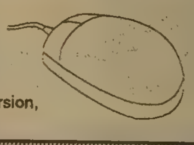
A. High-Quality Optical Mouse (shown at left) -- serial interface (9-pin "D-sub") two-button mouse by Mouse Systems, comes with 7" x 7.75" mousepad. No mechanical parts to wear out or get dirty...no balls to clean! New, with driver disk, OEM version (no book or box). HSC# 14719 $14.95

B. MacPRO mouse -- three-button Mac compatible mouse by Animas (shown at right). 350 DPI resolution, Apple ADB interface (4-pin Mini-DIN) for Mac II, IIc, IIci, IIfx, IIsi, LC, SE, Classic, or other Macintosh computer with ADB port. Programmable "cdev" allows full programmability for all three buttons. You even get a paint program called Colorframe (included on driver disk). New in box with manual, mouse-mat, 90 day warranty. HSC# 14718 $19.95



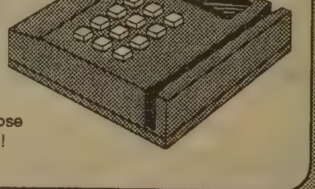
C. Generic Mouse (Super economy version) -- three-button mechanical mouse for 9-pin "D-sub" type serial interface. New OEM version (sorry, no book, software or fancy box), 100% Microsoft Compatible, should work with most mouse drivers. HSC#14673 $4.95

D. Fat Mouse -- For those of you with big hands and bold strokes! This serial-port two-button device is a larger-than-life mouse measuring 4" x 2.5" and 1.25" at the tallest point, and feels comfortably "fat" to the hand. 100% Microsoft Compatible, 200 cpi. opto-mechanical type mechanism. 90-day warranty. New, OEM version, (no box or software). HSC#14087 $7.95



Satisfy your Curiosity!

You've seen them everywhere... department stores, grocery stores, even at HSC! If you haven't wondered what was inside of these little credit card verification terminals, then you are not the normally inquisitive techno-junkie who reads these ads! If your curiosity is piqued, however, then this is your chance to resolve your questions. These used VeriFone Tranz 240 transaction terminals have a vacuum-fluorescent alphanumeric 16-character readout, 12-key keypad, Z-80 processor, CMOS program EPROM, and mag-stripe read-head. Some may have the reader disabled, as these were used strictly for keyboard entry, but it should be possible to reconnect it. They were made to communicate with a host computer over a RS-485 line, and use a 8.5 VAC adaptor (sorry, we don't have any of those yet). Quantity discounts available if you are really curious!



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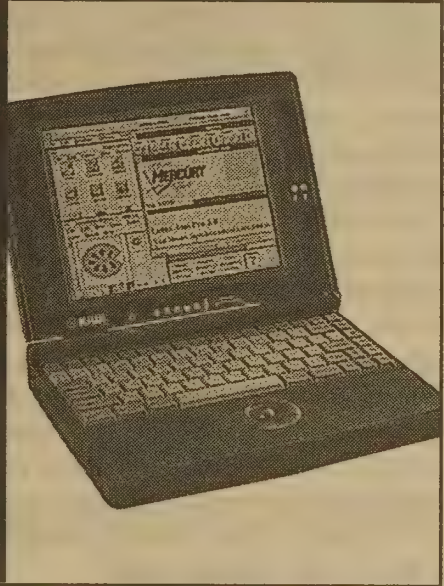
- PCMCIA:One Type II
- PORTS:Serial, Parallel, Keyboard Ext. VGA
- ADAPTER:Auto-Switchable AC/DC
- WEIGHT:5.8 Lbs. w/Battery

BAREBONE 180/C



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•CPU 486SX-25:	$75
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•CPU 486DX-33:	$150
•CPU 486DX2-66:	$250
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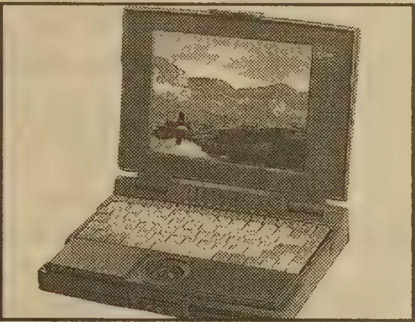

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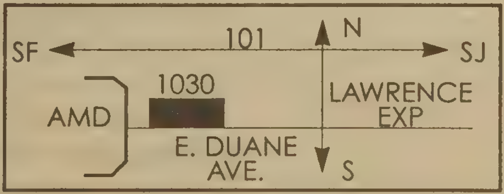

Continued from page 212

WaveMaker will automatically scale. Motion settings allow you to define how a logo flies on and off the screen, and its positioning. The timing of motions, plus any desired delays, are set in the Duration requester. Backgrounds can be solid, gradient, an image, or image sequence. Elements are static or animated "doodads and cool objects" that move behind the logo. Built-in elements include bars, lines, confetti, and many other shapes. Up to eight layers of elements can be used and many attributes are adjustable. Users can also take advantage of various premade animations, where all you need to identify is the logo object. Descriptive icons abound, providing quick identification of various settings. The included videotape provides handy examples of motions, elements, etc.

The program's interface is extremely logical and straightforward. Working with ARexx, you have full rendering control directly from WaveMaker if LightWave is running. WaveMaker can also create storyboard images of an animation. Additionally, up to fifteen different LightWave scenes can be set up to render sequentially.

WaveMaker gives novice LightWave users the ability to create high-quality logo animations. For videographers, it provides a coherent way to present clients with a finite number of animation possibilities in a very digestible format. You can spend as much or as little time as you want on logo animations and always obtain first-rate results. (Axiom, 1668 E. Cliff Rd., Burnsville, MN 55337-1300. 612/894-0596)

Book Reviews

Inside 3D Studio Release 3

Authors: Steven Elliot, Phillip Miller, and Gregory Pyros
Published By: New Riders Publishing
List Price: $49.95 (includes CD-ROM)
Reviewed By: Pamela Mason

Inside 3D Studio is the definitive reference book for the 3D Studio user to date. This is a big book with over one thousand pages, and it comes with a 200+ MB CD-ROM.

It addresses the importance of studying basic principles from other disciplines in laying the groundwork for designing animation that works. Among these principles are perspective drawing and working with light from the worlds of art, photography, and filmmaking to help understand the virtual camera in 3D Studio; the physics of motion; and the added dimension of time in animation. It explores how to make animation that is lifelike, not just technically accurate.

This is not a rehash of the 3D Studio manuals, it is a reference, a guide, and a springboard for creativity. It offers some fresh ideas and covers a myriad of topics. Topics that range from the basic, like a fun exercise where you make a neon sign, to the advanced, such as "Understanding Real-Time Recording of Computer-Based Animations."

The CD-ROM contains shareware graphics programs like Graphics Workshop and Paint Shop Pro plus an interesting program called Vista Pro for creating Fractal landscape fly-bys. There are various material maps, IXP IPAS routines, as well as exercises for your experimentation. I really like the few flics that they include, but it would be nice if there were more—it's a bit lean here.

I like that they mention the Achilles heel of animation, file management. They talk about a practical global approach to managing jobs and how important planning ahead is to any animation. There are some very helpful, practical hints here. If you are having a problem, or looking for another approach, *Inside 3D Studio* might be just the place to look. (New Riders Publishing, 1-800-428-5331)

New Riders' Official Internet Yellow Pages

Authors: Christine Maxwell and Czeslaw Jan Grycz
Published By: New Riders Publishing
List Price: $29.95
Review By: Kevin Savetz

If you've swum around cyberspace for more than an hour, you already know "Problem One" with the Internet—it's just too big. There is simply more stuff out there than anyone could possibly explore in a lifetime. Even when you know what you are looking for, trying to find something on the Internet is often like walking into an unindexed Library of Congress: you would have to poke your way down uncharted halls in the hope of finding what you are looking for.

Book publishers have come to our rescue in droves with a variety of Internet indexes. One popular metaphor used to index the Internet's vast holdings is the familiar Yellow Pages. *New Riders' Official Internet Yellow Pages* is one such catalog—a huge tome, weighing in at a hefty nine hundred-ish pages. It offers just what the Internet needs—a subject-based index. If you want to know where to find resources about travel, just turn to the T section. If you want to know about medical resources online, just page to the M's.

The thing that makes a book of this sort really work is quality, not quantity of information. This Yellow Pages book certainly has the quantity, but the quality isn't as exceptional: it is rather unevenly edited. For example, although this is supposed to be a subject-oriented listing, some of the listings seem to be listed by name rather than subject. Also, many items are listed in multiple places—for instance, every reference concerning "Archie" can be found both under "Archie" and under "Internet Tools," although a "see-also" reference would do nicely (and save space). Perhaps that practice makes it look like the book contains more information than it really does.

Some sections seem a little too long (for instance, a 7-page "medical" section) and others seem too small (like the 2-page "travel" index). Although this is purely a judgment call, a question of relative importance of subjects kept entering my mind while reading this book.

This index is unique in that it contains listings of some commercial services available via the Internet, that aren't strictly part of the Internet. For instance, there are many pointers to goodies on DIALOG, a pay-for-use service that is connected to the Internet. You may like this feature of the book, you may not. If you're a starving student, though, pay attention to the little "free!" icons that accompany the free stuff.

Despite its drawbacks, the book covers vast ground: geology, mathematics, religion, gay resources, abortion, Denmark, zoology, Emily Dickinson—they're all here. All in all, the *New Riders' Official Internet Yellow Pages* contains a vast amount of information—thousands of listings that will keep even the most fervent Internaut busy for months—or years. But because of its inconsistent indexing style, it works best as a book to browse rather than as an index. (New Riders Publishing, 201 W. 103rd St., Indianapolis, IN 46290) ■

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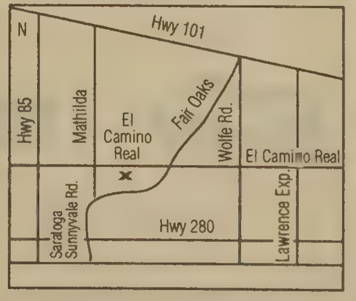

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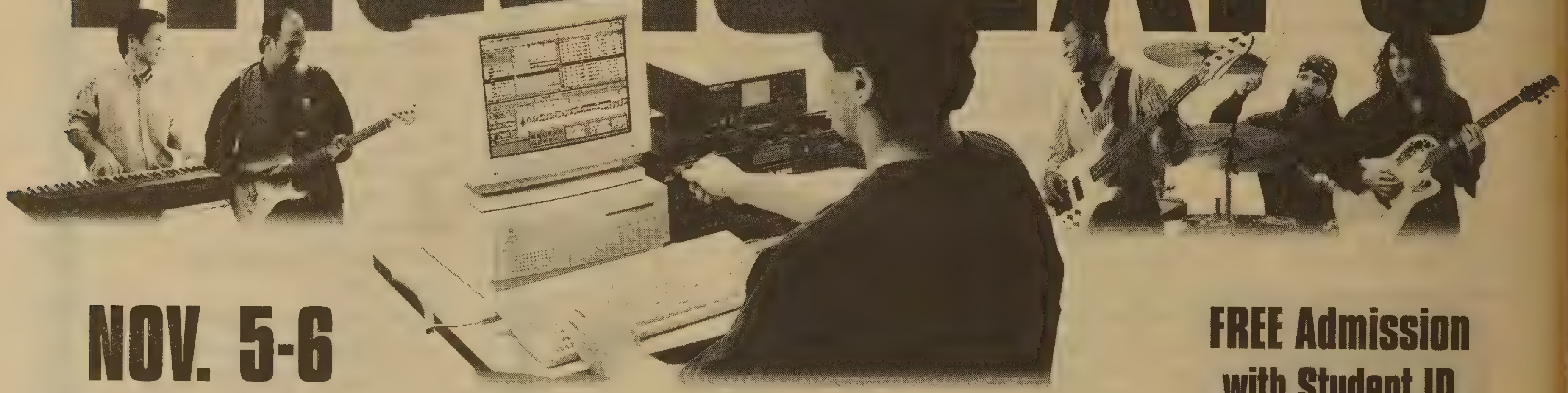

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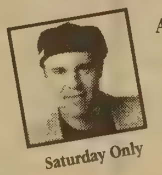

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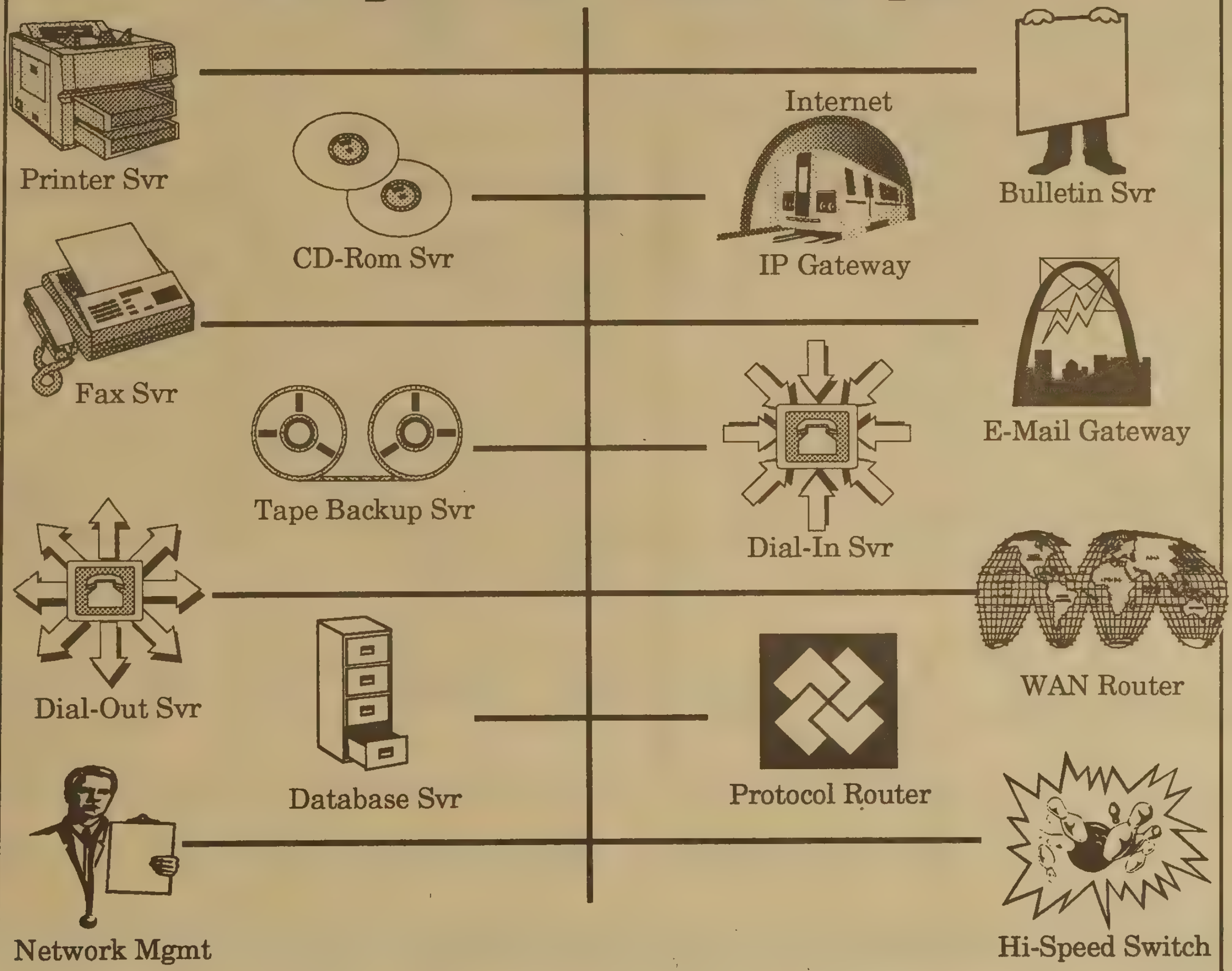
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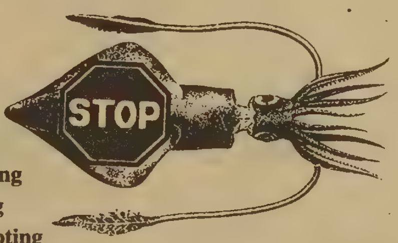

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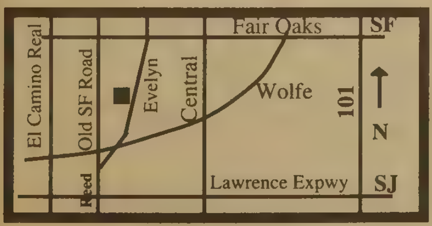
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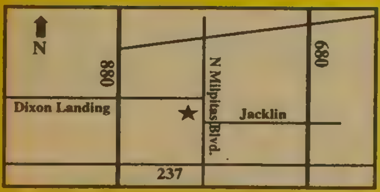

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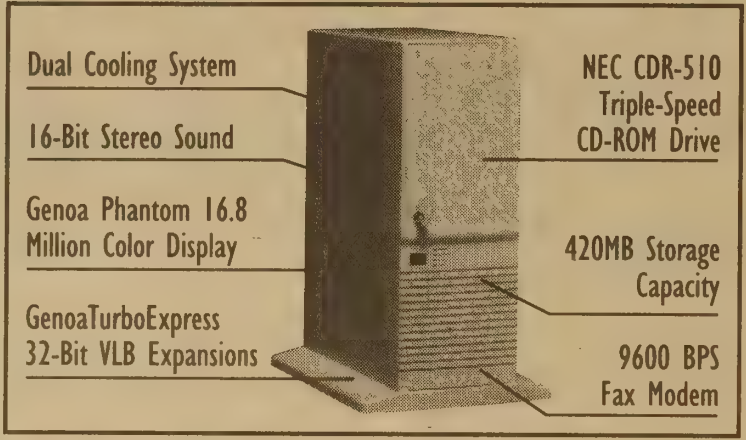
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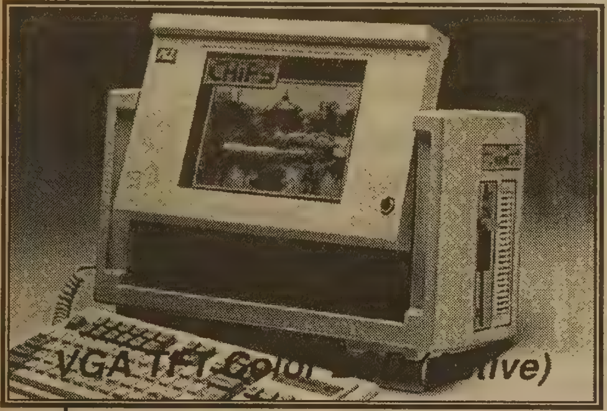

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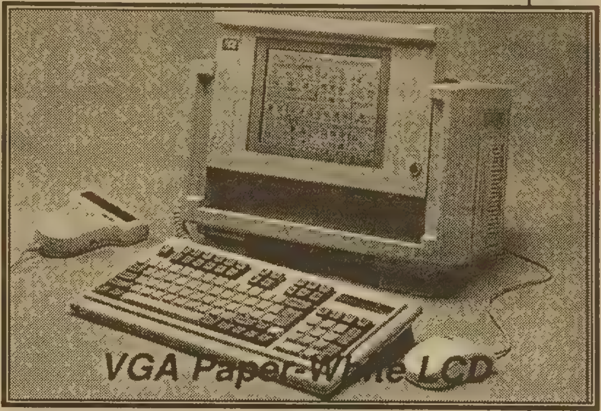

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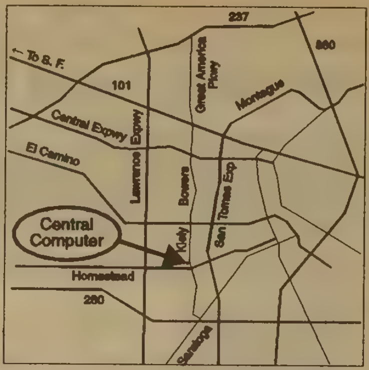

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- 1 half ht or SCSI for Mac / PC, 40W, w. cables	69
- 2 half ht or 1 full ht for PC, 60W	95
- 2 half ht or 1 full ht for Mac, 60W, w. cables	115
- 3 half ht or 1 full & half ht for PC, 60W	109
- 3 half ht or 1 full & 1 half ht for Mac, w.cables	129

3. CONTROLLER

ADAPTEC	
1515 16 bit Controller w. Kit	89
1522A Fast SCSI Board, 3Mb/s / w. Kit	145/85
1542CF SCSI Board, 10Mb/s / w. Kit	175/239
2742AT SCSI EISA w. Kit	365
2842VL / 2842A SCSI VLB w. Kit	245/269
2940 SCSI PCI w. Kit oem / reg	279/299
2940W Wide-SCSI PCI Kit w. cable	349
APA460 Slim PCMCIA SCSI	279
ASW-1440 ASPI Netware Manager v3.3	65
ASW-310 Sy-Tos Plus (tape backup s/w)	*(85)99
ASW-EZ SCSI 3.0 for Dos & Windows	69
T348K Parallel to SCSI Adapter	149
T358K EPP Parallel to SCSI Adapter	189
BUSLOGIC	
KT445S SCSI VLB w. Kit	199
KT542B SCSI-2 w. Kit	199
KT545S Fast SCSI-2 w. Kit, 10Mb/s	209
KY747S Fast SCSI-2 EISA w. Kit	365
KT946C SCSI PCI w. Kit (supports 8GB HD)	279
COREL	
Corel SCSI Software v1.2 / v2.0	69/89
Corel SCSI CD Power	69
DTC	
2278VL IDE w. I/O VLB, 32 bit	35
3280AS SCSI	105
FUTURE DOMAIN (SCSI)	
TMC-1660 for AT (HD only) / SVP	119/127
TMC-1680 for AT (4FD & HD), 15Mb/s	129
TMC-1680 SVP (SCSI Value Pack)	139
TMC-3260 PCI / SVP	129/165
KOUWELL	
IDE only	27
IDE w. AT I/O (2S 1P 1G)	34
IDE w. AT I/O (2S 1P 1G) & 16550 & 2.88	59
IDE w. AT I/O (2S 1P 1G) VLB & 16550 chips	69
PROMISE (drive cache)	
DC-200 IDE, cache up to 16MB	89
DC-420 IDE VLB w. 512k, cache up to 1MB	95
DC-4030VL IDE VLB, cache up to 16MB	105
DC-2040 Bios Chips & CD Driver	15
QLOGIC	
Fast SCSI ISA w. Kit	125
Fast SCSI EISA w. Kit	199
Fast SCSI VLB w. Kit	189
Fast SCSI PCI w. Kit	299
ULTRASTOR	
ULT15C IDE cache (w/o cable)	109
VITEX	
IDE w. I/O (2S 1P) VLB	35
IDE w. 4FD/ 2S 1P/ 16550 chips	49
IDE w. 4FD/ 4S 2P 1G/ 2S16550/ VLB	89
WONDER SYSTEM (USA made)	
IDE w. 4FD/ 2.88/ Drivers Tape/ 1.0 Mbps	35
IFSP2 IDE w. 4FD/ 3S 2P 1G/ 2S16550	69
SCSI w. CD Rom Drivers	45
VL2000 IDE w. AT I/O VLB	35
VL2018 IDE w. 2HD/ 4FD/ 16550/ 2.88/ VLB	69
OTHERS	
ACCULOGIC IDE PCI Controller	49
BOCA IDE w. I/O (2S 1P)	49
IDE w. I/O (2S 1P)	19.50
IDE w. I/O VLB	29
SC200 SCSI-2 PCI (w. NCR chips)	85

4. CPU & MATH CO

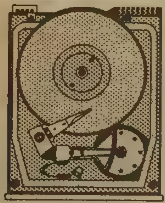
CPU :	
AMD	
386 DX-40	59
486 DX2-66	245
CYRIX	
486 DX-33	139
INTEL	
386 DX-33 / 40	49/49
486 DX-33	229
486 DX-50	309
486 DX2-50	269
486 DX2-66	275
486 DX4-100	699
Pentium 586-60	449
Pentium 586-66	579
Pentium 586-90	739
Math Co Processor :	
CYRIX	
83D87 - 33	39.50
83D87 - 40	39.50
Cx486 DLC TI-33	75
Cx486 DLC TI-40	85
INTEL	
387 DX (for 16 / 20 / 25 / 33 MHz)	85
387 SX (for 16 / 20 / 25 / 33 MHz)	79
OTHERS	
Cooling Fan for 486 CPU	7.50
Cooling Fan for Pentium 586	15

5. DIGITIZER

KURTA	
6 x 8, w. Interface	265
SUMMASKETCH	
III 12 x 12, 4 or 16 button	269
III 12 x 18, 4 or 16 button	549
WACOM	
UD-0608R 6 x 8, w. UP-201 Pressure Stylus	345
UD-1212RP 12 x 12, w. UP-201 Pres. Stylus	529

*(price) .... special , while supplies last

6. DRIVE



FLOPPY DRIVES :

MICRO SOLUTIONS (external)

1.2 / 1.44 (use printer port)	139

SYQUEST (removable)

88MB 3.5" w. cartridge, Int	349
88MB 5.25" w. cartridge for Mac, Ext.	429
105MB 3.5" w. cart., IDE host adapter	279
105MB 3.5" w. cart., printer port for PC, Ext.	369
105MB 5.25" w. cart., SCSI for Mac, Ext.	389
270MB 3.5" w. cartridge, IDE, Int	499
270MB 3.5" w. cartridge, SCSI, Ext.	549
270MB 3.5" w. cart., printer port for PC, Ext.	549
105MB Cartridge / 270MB Cartridge	59/75

TEAC

1.2MB 5.25"	46
1.44MB 3.5" / w. frame	36/40
2.88MB 3.5" w. frame	85
Dual - 1.2MB & 1.44MB	89

HARD DRIVES :

CONNER

CFS-210A 213MB 14ms IDE 1" ht	165
CFA-340S 340MB 64k SCSI	229
CFS-420A 420MB 14ms IDE 1" ht	205
CFA-540A 540MB 12ms 256k IDE 1" ht	265
CFA-540S 540MB 12ms 256k SCSI	289
CFA-810A 810MB 12ms 256k IDE 1" ht	419
CFP-1060S 1.06GB 10ms 256k SCSI	629
CFA-1080A 1.08GB 9.5ms 256k IDE	569
CFP-2120S 2.1GB 10ms 1/2 ht	1125

DIGITAL

3210S 2.1GB 9.5ms 1/2 ht	1345
5300S 3.0GB 11.5ms full ht	1699
5400S 4.0GB 11ms full ht	2575

FUJITSU (5 yr. warranty fr. Fujitsu)

M2694ESA 1.0GB 10ms SCSI-2 3.5" 1/2 ht	679

MAXTOR

MXT-7171A 170MB 15ms IDE 3.5"	145
MXT-7290S 290MB 14ms 64k SCSI	209
LXT-7345A 345MB 14ms 64k IDE 3.5"	185
MXT-7345S 345MB 15ms SCSI 1" ht	219
MXT-7546 546MB 12ms 256k IDE	259
Optical Rewritable 1.3GB 19ms SCSI, 4MB Ext.	
Tahiti III MXO-9410000 Drive only	2175
1GB Glass Cart. MXO-2015382 512k sector	165
1GB Glass Cart. MXO-2015384 1024k sector	165
1GB Plastic Cart. MXO-2015383 512k sector	135
1GB Plastic Cart. MXO-2015385 1024k sector	135

MICROPOLIS

MC-4110A 1.0GB 8.5ms 512k IDE 1/2 ht	629
MC-4110 1.0GB 8.5ms 512k SCSI-2 1/2 ht	629
MC-2217A 1.75GB 10ms 512k IDE 1/2 ht	955
MC-2217 1.75GB 10ms 512k SCSI-2 1/2 ht	955
MC-2217AV 1.75GB Audio Visual	1085
MC-2217DW 1.75GB Fast Wide-SCSI	1285
MC-1926 2.1GB 13ms 512k SCSI-2 full ht	1345
MC-1936 3.0GB 11ms 256k SCSI full ht	1975
MC-1936AV 3.0GB Audio Visual	2275

QUANTUM

LPS-270AT 270MB 12ms 128k IDE	189
LPS-270S 270MB 12ms 128k SCSI	209
LPS-540A 540MB 12ms 128k IDE	275
LPS-540S 540MB 12ms 128k SCSI	295
EM-1080S 1.08GB 9.5ms SCSI-2	629
EM-1440S 1.4GB SCSI-2	799
EM-2100S 2.1GB SCSI-2	1155

SEAGATE

ST-3243A 214MB 16ms 32k IDE	169
ST-3290A 261MB 16ms 64k IDE	179
ST-3391A 341MB 12ms 256k IDE	209
ST-5660A 546MB 12ms 256k IDE	275
ST-31200N 1.05GB 9ms 256k SCSI-2	635
ST-12550N 2.14GB 8ms 1M SCSI-2	1399
ST-12550W 2.14GB Fast-wide SCSI	1499
ST-43400N 2.9GB 10ms 512k SCSI-2	1895
ST-15150N 4.3GB 8ms 1M SCSI	2495
ST-15230N 4.3GB 9ms 512k SCSI	2185
ST-41080N 9.0GB 11.5ms 1M SCSI	4565

WESTERN DIGITAL (3 yr. warranty)

WD-2340 340MB 12ms IDE	199
WD-2420 420MB 13ms IDE	219
WD-2540 540MB 12ms IDE	289
WD-2700 700MB 10ms IDE	419
WD-3100 1.0GB 10ms IDE	579

OTHERS

Impression CardDrive (2 slot PCMCIA)	185
Mounting Frame for 3.5" Hard / Floppy Drive	5/5
Removable Case for 3.5" HD IDE / SCSI	39/42

7. I/O CARD

BOCA (fast chip serial)

Bocaboard w. cable (IRQ 3,4,5,7,10,11,12,15) - 4 port / 8 port / 16 port	79/119/239

KOUWELL

AT I/O (2S 1P) / AT I/O (2S 2P)	25/29
AT I/O (2S 1P 1G)	25
AT I/O (2S 1P 1G) w. 16550 chips	49
AT I/O (2S 1P 1G) w. IDE Controller	29
4 Serial Ports	45
Printer Card	15
Serial Card (XT, AT)	15

QUICKPATH

13 Port I/O w. 4-16550UARTs + Extd. IRQs (2IDE, 4F, 4S, 2P, 1G)	125
4 Serial, 16550UARTs, 8addr, 10IRQs (3,4,5,7,9,10,11,12,14,15)	99

SIIG (5 yr. warranty)

(2S 1P) w. 16550 chips	49

STB 4-COM

4 Serial, 16 bit, 16550, support Com 1-8, IRQ (2,3,4,5,10,11,12,15)	109

VITEX

AT I/O (2S 2P) w. 16550 chips	45

8. KEYBOARD

ANCER (black)

101 Key	42

FOCUS

FK2001 101 Click	42
FK9000 129 Key Programmable	59

NORTHGATE OMNI

101NI	69
102	69
Ultra T	95

SIIG (5 yr. warranty)

Suntouch Jr. 84 Key Mini	45
Supertouch 101 Click	53
Wavetouch 101 Soft	39

OTHERS

BTC 84 Key Mini	35
Honeywell 101	45
Keycat II 101 w. Trackball	65
Keytronic 101	35
Maxi 101	35
Maxi Key 124	59
Mitsumi 101	30
PT505C 101	25

9. MEMORY

DRAM

1MB x 1 - 80ns	6.20
256k x 4 - 80ns	5.50

SIMM

1MB x 9 - 60ns / 70ns / 80ns	40/39/38
4MB x 9 - 60ns / 70ns	149/145
16MB x 9 - 70ns	779
256k x 9 - 70ns / 80ns	14/13
1MB x 36 - 60ns / 70ns	169/160
2MB x 36 - 60ns / 70ns	330/320
4MB x 36 - 60ns / 70ns	625/619
8MB x 36 - 60ns	1280
For Mac : 4MB x 8 - 70ns / 80ns	159/155

SIPP

1MB x 9 - 70ns (3 chips)	41

COMPUTER MEMORY (3rd party)

Compaq

for Deskpro 386N - 2MB / 4MB / 8MB	109/199/369
for Deskpro 386SX20 - 2MB / 4MB / 8MB	109/199/369
for Deskpro 386-20e/ 20/ 25e - 4MB	225
for Deskpro 486M - 2MB / 4MB / 8MB	109/199/369
for Prolinea 386-25ZS/ 25S - 2MB / 8MB	105/379
for Prolinea 486-33/ 50/ 25S - 4MB / 16MB	175/639

IBM

for PS/2-50Z/ 55SX/ 65SX/ 70 - 2MB / 4MB	129/229
for PS/2 80-111/ 311/ 121/ 321 - 4MB	225
for PS/2 80-A21/ A31/ A6 - 4MB	229

KINGSTON MEMORY

current price	call

LAPTOP / NOTEBOOK (3rd party)

AST

for Premium Exec - 4MB	199
for Power Exec - 4MB	219

Compaq

for Contura 3/ 20/ 25 - 4MB / 8MB	199/359
for LTE-Lite 20/ 25/ 25C - 4MB / 8MB	229/399
for LTE 286 - 2MB / 4MB	129/195
for LTE 386S20 - 4MB	239
for SLT 286 - 1MB / 4MB	99/239

IBM

for L40SX/ N33SX - 4MB / 8MB	199/399

Macintosh

for Powerbook 140/ 170 - 6MB	255

NEC

for Ultralite Versa Versae - 4MB / 8MB	205/379

Packard Bell

for 386SX - 2MB / 4MB	155/259

Panasonic

for 170/ 270/ 370 - 1MB	99

Toshiba

for CT 380/ 480 - 4MB / 6MB	239/320
for T1600 - 2MB	139
for T2200SX - 2MB / 4MB / 8MB	119/229/379
for T3100SX - 2MB / 4MB	129/209
for T3200 - 3MB	169
for T3200SX - 2MB / 4MB	129/209
for T3400 - 4MB / 8MB	239/449
for T5100 - 2MB	129
for T5200/ T8500 - 2MB / 8MB	129/449
for T6400 DX/ SX/ SXC - 4MB / 8MB	220/379

LASER PRINTER MEM. UPGRADE

JET RAM (3rd party)

for Epson EPL6000 - 2MB / 4MB	155/245
for HP Desk Jet 500/ 500C - 256k	69
for HP Laser Fax - 1MB	80
for HP Laser Jet II/ IID - 1MB / 2MB / 4MB	99/145/235
for HP Laser Jet III/ IIIP/ IIID - 1MB / 2MB / 3MB / 4MB	79/125/169/215
for Panasonic KX-P4410/ 4430 - 1MB / 2MB / 4MB	95/139/229
for Panasonic KX-P4420/ 4450i - 1MB / 2MB / 4MB	99/145/235
for Panasonic KX-P4450 - 1MB	139
for Panasonic KX-P4455 - 2MB	169
for Panasonic KX-P4400/ 5400 - 2MB	185
for QMS PS410 - 1MB / 2MB / 4MB	99/145/235
for QMS PS815/ 825 - 2MB / 4MB	159/249
for Texas Instruments Micro Writer - 1MB	69
for Texas Ins. Micro Laser Turbo XL - 1MB	69

PACIFIC DATA

1-2-4 Plus for HP II/ IID - 1MB / 2MB / 4MB	115/159/249
Pacific 4 for HP IIP+/ IIIP/ III/ IIID - 1MB / 2MB / 4MB	89/135/225
Pacific 4 SIMM for HP4P/ 4MP/ 4+/ 4M+ - 4MB / 8MB	165/320
Pacific 4 SIMM for HP 4/ 4+/ 4Si/ 1200C - 4MB / 8MB	189/375
Pacific 4 SIMM for ProTracer - 8MB	515

10. MODEM & FAX

BOCA

14.4 Fax Data Voice Int	135
14.4 Fax Int / Ext	95/125
14.4 Pocket Fax	169
28.8 Fax 14.4 Modem Int / Ext	199/235

GVC

14.4 Fax Int / Ext	99/119
28.8 Fax Int / Ext	155/179
PCMCIA 9624 Fax	109
PCMCIA 144 Fax	189

HAYES

Accura 2400 Int / Ext	65/75
Accura 144 + Fax Int / Ext	*(129/149)
Accura 28.8 Fax 14.4 Modem Ext	275
ESP Communication Single / Dual	85/125
Optima 144 Fax Ext	389
Optima 288 B Fax 144 Int	379
Optima 288 V.Fast 144 Fax Ext	435
PCMCIA Optima 144 Fax	*(239)285
SmartCom for Windows	*(47)

INTEL

Faxability software	*(25)
Faxability Plus/OCR 2.0 for Windows	*(75)
New Fax Modem 96 Int / Ext	109/129
New Fax Modem 144 Int / Ext	119/139
PCMCIA 144 Fax	*(229)
PCMCIA 144 International Fax	399
SatisFAXtion w. Faxability Software - 400 144/144 v.42, v.32bis, MNP5 Int	259
- 400e 96/144 4k data buffer Ext	*(289)325

MEGAHERTZ

PCMCIA XJ124FM 96/24 Fax w. X-Jack	*(99)
PCMCIA XJ1144 144 Fax w. X-Jack	*(225)
PCMCIA XJ2144 w. X-Jack	255
Pocket P2144 144 Fax	245

MICROCOM

Deskporte ES 28.8 Fast 14.4 Fax Ext	245
Deskporte EP 28.8 Fast 14.4 Fax Ext	*(299)335
Microporte 4232bis Fax	465

PRACTICAL PERIPHERALS

Fax Me (turn HP laser to fax receiving)	*(59)
Mini Tower 144FX144 Ext	*(139)
PM144FX144 Int	119
PCMCIA 144 Fax	279
Pocket 144 Fax	299
288 Fax 144 Ext (PC 288 LCD)	349

SHIVA

Net modem/E Ethernet BNC/TP	1475

SMARTLINK (w. AT&T chips)

1414BAV 144 Fax w. Software Int (w. 16550)	75
1914ATU 144 Fax Ext (upgradable to 19.2)	125
1414PAV Pocket 144 Fax	155
1914BAT 19.2/14.4 Fax Int / Ext	99/135
1414BOV-V7 144 Fax/ Voice/ Data Int	119

US ROBOTICS

Courier v32 Terbo Fax 19.2MB w. ASL Int	359
Courier v32 Terbo Fax 19.2MB w. ASL Ext	379
Sportster 144/144 Fax MNP5 Int / Ext	109/129
Sportster 144/144 for Mac Ext	149
Sportster 28.8/14.4 Fax Int / Ext	185/199
Worldport PCMCIA 144 Fax	189

ZOOM (7yr. Warranty fr. Zoom)

96/96 w. WinFax Lite Int / Ext	105/125
144/144 w. WinFax Lite Int / Ext	129/149
144/144 Fax Modem & Voice Int / Ext	159/179
28.8 V.Fast 14.4 Fax Int / Ext	169/199

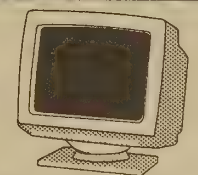
ZY-XEL

U1496B 16.8 Voice 14.4 Fax w. Software Int	289
U1496B+ upgradable to 19.2Kbps Int	397
U1496E 16.8 Voice 14.4 Fax, LED Ext	299
U1496E+ upgradable to 19.2Kbps Ext	399
U1496P Portable 16.8/14.4 Fax 2 line	389

OTHERS

CommShare 550 Phone & Fax Auto-switch	89
CommShare 750 4 Port Switching	109
National Semiconductor TyIN 2000 Int	85
SIIG TeleCommunicator 10-in-1 Fax	219
Supra 144 Fax Int / Ext	77/117
Winport (fax & modem sharing software)	185

11. MONITOR



EMC

EM1412 14" Mono Paper White, 90-260v	95
EM1417 Mono Paper White VGA	119

EYE Q

SM1411 14" Falt Mono Amber White	95
CM1438 14" 1024 x 768 .39 Interlaced	199
Z1488N 14" 1024 x 768 .28 NI	249

HITACHI

CM1797M 17" 1280 x 1024 .26 NI	975

KFC

CT1428A 14" 1024 x 768 .28 NI	249
CA1507 15" Flat 1280 x 1024 .28 NI LED.	375
CA1508 15" Falt 1280 x 1024 .28 NI LCD	389
CA1718 17" Flat 1280 x 1024 .26	745

MAG (auto switch power)

DX15F 15" 1280 x 1024 .28 NI (no LED)	389
DX17F 17" 1280 x 1024 .26 NI (no LED)	689
MX15F 15" MPRII Flat 1280 x 1024 .28 NI	459
MX17F 17" Flat 1280 x 1024 .26 NI	849
Mac Adapter	25

MITAC (3 yr. warranty)

M1564 15" 1280 x 1024 .28 NI	325
M1775 17" 1280 x 1024 .28 NI	639

NANAO

F340iW 15" Flat 1024 x 768 .28 NI	635
F550iW 17" 1280 x 1024 .28 NI	*(879)979
F560iW 17" 1280 x 1024 .26 NI	1199
T560i 17" 1280 x 1024 .25 NI	1445
T660i 20" 1280 x 1024 .31 Trinitron NI	1995
F760iW 21" 1280 x 1024 .31 NI	1915
F780iW 21" 1600 x 1280 .26 NI	3095

NEC

3FGe 15" 1024 x 768 .28 NI	*(549)
3V 15" 1024 x 768 NI	429
4FGe 15" Flat 1024 x 768 .28 NI	625
5FGe 17" 1024 x 768 .28 NI / w. Lens	955/1035
5FGp 17" 1280 x 1024 NI	1129
6FGp 21" 1280 x 1024 NI	1995
NEC Monitor Lens : Anti-reflection, Anti-static for 4FG / 5FG / 6FG	75/*(99)/185
FG/MacII Cable Adapter Kit	9.95

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*(price) .... special , while supplies last

NOKIA

449E 15" 1280 x 1024 .28 NI	499
447B 17" 1280 x 1024 .25	935
447X 17" 1600 x 1280 .25 NI	1059
445X 21" 1600 x 1280 .26	2485

OPTIQUEST

1000S 14" 1024 x 768 .28 NI	269
1500D 14" 1280 x 1024 .28 NI	349
2000DC 15" 1280 x 1024 .27 NI	399
2000DX 15" 1024 x 768 .28 NI	379
4000DS 17" 1280 x 1024 .27 NI	725
4000DC 17" 1280 x 1024 .27 NI	755
4000TC 17" 1280 x 1024 .25 Trinitron NI	825

PANASONIC

C1795E 17" 1280 x 1024 .28 NI	*(665)765
C1991 20" 1280 x 1024 .31 NI	*(899)999

PROTON

PM1561A 15" 1280 x 1024 w. speakers built-in	365

SIIG

9" VGA Mono Paper White 640 x 480	135

SONY

15SF 15" 1280 x 1024 .25 NI	439
17SE 17" 1600 x 1280 .25 NI	965
20SE 20" 1280 x 1024 .30 NI	1835

STANDARD TECHNOLOGIES

400-M 14" VGA Paper White	119
428-VESA 14" 1280 x 1024 .28 NI	249

VIEWSONIC

6e 14" 1024 x 768 .28 NI	275
14e 14" 1024 x 768 .28 NI, MPRII	349
15 15" Flat 1280 x 1024 .28 NI	419
15EX 15" Flat 1024 x 768 .28 NI, MacII	389
17 17" 1600 x 1280 .27 NI, MacII	855
17G 17" 1280 x 1024 .28 NI	745
20 20" 1600 x 1280 .28 NI, MacII	1479
21 21" 1600 x 1280 .26 NI, MacII	1669
Mac Cable Adapter	35

12. MOTHERBOARD

AIR (w/o cpu)

486-DX2-66 256k, 3VLB slots, built-in AT I/O	189
486-33 / DX2-66 256k, EISA, 3VLB slots	349
486SH - 33 / DX2-66 256k, Green PC	145
586-60 256k, PCI ISA VLB, built-in AT I/O	385
586-60 256k, PCI EISA VLB, Fast-wide SCSI	615

AMI (w/o cpu)

Super Voyager II 486-33 256k VLB, 7 slots	375
Super Voyager II 486-DX2-66 VLB, 7 slots	375
Enterprise IV 486-33 256k EISA VLB	485
Enterprise IV 486-DX2-66 256k EISA VLB	485

ASUS (w/o cpu)

486-DX2-66 256k PCI, built-in IDE+SCSI I/O	275
586-60 / 66 256k PCI EISA, built-in SCSI I/O	485
586-90 / 100 256k PCI EISA, built-in SCSI I/O	855

IBM

486BL3X-75MHz VLB w. CPU & Math Proc	349
486SLC-33 / 66 16k ISA w. CPU & Math Proc	219

INTEL PREMIERE (w/o cpu)

586-90MHz 256k PCI	415

LYNX (USA made, w/o cpu)

486-33 / DX2-66 256k VLB Green PC	135

MICRONICS (w/o cpu)

BCP 386-33 64k, 4MB max	85
486-33 / DX2-66 256k VLB	215
JX30 486-DX2-66 256k VLB w. Zif socket	259
486 - 33 / DX2-66 256k EISA VLB	475
486-DX2-66 256k EISA E2	395
586-60 256k, ISA PCI, 3PCI slots	465
M5PE 586-60 / 66 256k EISA	595
M54PI 586-90 w. CPU & IDE I/O (Neptune)	1395

NICE (w/o cpu)

486-33 / DX2-66 256k VLB, Green PC	169
486-50 / DX2-66 256k Mini EISA VLB	225
486-50 / DX2-66 256k EISA VLB	315

OPAL (IBM)

486SLC-66 64k VLB w. CPU & Math Proc	235

SUPER P5VL & P54VL-PCI

Pentium P5VL-PCI 586-66 256k Flash Bios	335
Pentium P54VL-PCI 586-90 256k Flash Bios	415

OTHERS (w/o cpu)

386-40 128k ISA, 6 slots, w. CPU	129
486-33 128k ISA	105
486-33 256k ISA	119

13. MOUSE & JOYSTICK

AGILER

ATB-610 Serial Trackball	21.50
Master Plus 400	16.50

ANCER (black)

3-button	22

KENSINGTON

Expert Bus 4.0	119
Expert Serial & Trackball 4.0	99

LOGITECH

C14 Serial 2-button oem	19
Cordless II	85
Cyberman 3D Controller	*(65)
Dexxa Serial	19.50
First Serial C15 oem / reg	25/31
Fotoman Plus Camera for PC & PS/2	549
Mouseman Bus oem / reg	49/64
Mouseman Serial oem / reg	34/50
PG15 Bus oem	45
Trackman II	75
Trackman Portable	55

MICROSOFT (USA made)

Bus 2.0 400dpi oem / w. Bus Card	43/65
Bus 2.0 w. Expansion Card	79
PS/2 2.0	59
PS/2 & Serial Mouse 400dpi oem	45
Serial 2.0 400dpi oem / manual	35/2.50
Serial 2.0 w. 9 to 25 pin Adapter	58

MOUSE SYSTEMS

Altes	9.95
Cobra (joystick)	9.95
Mouse! Serial w. Pad	19
PC Mouse (3-button optical)	39.50
PC Trackball II	45
Serial Bus Card (9IRQs)	29
The New Mouse 400dpi (3-button)	39

JOYSTICK :

THRUSTMASTER

ACM Gamecard / UPROM	29/29.95
Flight Control System	75
Flight Control System Pro	*(114)
Flight Stand Holder	19
Formula T1 (drive control)	129
Rudder Control	115
Weapon Control MKII	*(99)

OTHERS

Quickshot Smart Game Card	16.50

14. NETWORK

3COM

3C503 Etherlink II 16 bit coax / TP	165/175
3C507 Ethernet 16 bit coax / TP	289/299
3C509 Etherlink III coax / 5 pack	118/529
3C509 Etherlink III TP / 5 pack	119/*(515)
3C509 Etherlink III Combo	139
- 5 pack / 20 pack	*(499)1895
3C509 TPO for TP only 5 pack	449
3C529 Etherlink III for MCA coax / TP	235/239
3C579 Etherlink III EISA coax / TP	228/229
3C589 PCMCIA TP	199
3C589 PCMCIA Combo	249
3C16170 Link Builder TP (12TP + 1AUI)	359

ADDTRON

AE-200JL Jumperless BNC & TP	55
AE-200LC BNC & TP	52
ET-200STS NE2000 coax (BNC + AUI)	*(49)
HUB: UTP8/L (8TP + 1BNC)	155
HUB: UTP16 (16TP + 1BNC) + 1AUI)	399
Pocket Adapter BNC / TP	115/119
Transceivers: ET10TB (TP<->AUI)	39
Transceivers: ET10CB (BNC<->AUI)	39

ALLIED TELESIS (CentreCOM)

AT-1500T / AT-1700T TP	*(69)/79
Transceivers: MX10	42
Transceivers: 210T	42

ARTISOFT (Lantastic)

Central Station II	399
Corstream Server 5-user	625
Corstream Server 5-user + Eagle EP3210	775
Corstream Server 10-user + Eagle EP3210	1495
Eagle Ethernet Cards :	
- Eagle EP2000 coax / TP	89/85
- Eagle EP3210 coax / TP	165/159
- Eagle NE2000 Plus Ethernet coax / TP	92/89
- Eagle NE3200 EISA coax w. TPA (FS)	465
- Eagle NE3210 EISA 32 bit Combo	199
Lantastic Z 5.0 (2 stations)	89
Lantastic for TCP/IP single / 5-user	199/785
Lantastic 6.0 Starter Kit coax 2-user	*(285)
Lantastic 6.0 Add On NR-SI 2000C	*(135)
Lantastic 6.0 Add On NR-SI 2000T	155
Lantastic 6.0 Software single user	85
- for 5-user / 10-user	339/599
- upgrade for single / 5-user	39/129
NR2000C BNC only	167
NR2000T RJ45 only	169
NR-SI 2000C coax / 5 pk / 10 pk	85/375/685
NR-SI 2000T TP / 5 pk / 10 pk	84/379/689
NR-SI 2000A Combo	115
NR-SI 2000M for MCA	139
Remote Boot ROM for NR2000	45

ASANTE (for Mac)

AH1012 Intelligent HUB 12 Port	875
10T HUB 8 Port	255
10T HUB 12 Port	495
FriendlyNet with AUI /BNC /TP	69

BOCA

HUB: 8 Port TP only	149
HUB: 16 Port TP only	269
PCI 32 bit Ethernet Combo	89
PCMCIA 10BT Ethernet	169

CASTELLE

JetPress (network Print server) for HP II. IID, III, IIID, coax / TP	429
LANPress (print server connects up to 4 printers)	
- Ethernet Thick/Thin coax (1P 3S)	475
- Ethernet 10BaseT (1P 3S)	475
- Ethernet BNC & 10BaseT (2S 2P)	435

CeLAN

Flex HUB Ethernet SNMP	call
Repeater	call

D-LINK

PCI 32 Ethernet Combo	195
VLB 32 Ethernet Combo	285

DCA

Crosstalk 2.1 for Windows	109
Communicator	58
IRMA Workstation Dos / Win	225/359
IRMA 3270 for MacII/ LC/ SE	735

FARALLON

PN381 PhoneNet w. Timbuktu for Win	259

IBM

Ether 16 coax / TP / Combo	89/85/95
PCMCIA 10B2	255
PCMCIA 10BT	235

INTEL

EtherExpress 16 TP / 5 pk	109/*(445)
EtherExpress 16 Flash coax	118
EtherExpress 16 Flash TP / 5 pk	119/545
EtherExpress 16 Flash Combo / 5 pk	135/625
EtherExpress 16 MCA coax / TP	175/185
EtherExpress 32 EISA coax (FS)	439
EtherExpress 32 Flash EISA Combo (WS)	229
EtherExpress Pro 8/16 bit cards :	
- PCLA 8200 BNC + AUI + TP	129
- PCLA 8210 BNC + TP	115
- PCLA 8220 TP	109
- PCLA 8205 Flash BNC + AUI + TP	139
- PCLA 8215 Flash BNC + TP	125
HUB: 12 Port EtherExpress ISA / EISA	565/645
LAN Project 1.5 (virus protection)	685
LAN Sight Support 4.0	345
LAN Spool s/w 386 NLM v3.5A	425
Netport II Thin & Thick	395
Netport II 10BT	399
Netport Express XL	465
NetSatisfaxtion 2.5 for Novell	955

LANPRO

2000JC 16 bit BNC only	45
2000JT 16 bit TP w. cable	45
2000JA 16 bit Combo	49
Dos 7 + 2000JC	75
EP3010A Pocket Combo	129
HUB ER5390: 8 Port (8TP + 1BNC)	169
HUB ER5396: 16 Port (16TP + 2BNC)	355
Netware NE2000 Combo Starter Kit	159

NATIONAL SEMICONDUCTOR

InfoMover NE2000+ coax / 5 pack	85/399
InfoMover NE2000+ TP / 5 pack	79/355
InfoMover NE2000+ Combo / 5 pack	99/475
InfoMover NE4100 PCMCIA coax	175
InfoMover NE4100 PCMCIA TP	179

NOVELL

Dos 7 (w. Personal Netware) oem / reg.	45/55
EPROM for NE2000	35
Microdyne NE2000+ coax / 5 pack	*(75/349)
Microdyne NE2000+ TP / 5 pack	*(69/319)
Microdyne NE2000+ Combo / 5 pack	*(85/389)
Microdyne NE3200 EISA coax / TP	450/450
Netware 3.12	
- 5 / 10 / 25-user	615/1395/2085
- 50 / 100 / 250-user	2695/3995/6995
Netware 4.01	
- 5 / 10 / 25-user	825/1795/2625
- 50 / 100 / 250-user	3595/5495/9695
Personal Netware oem / reg	45/75
Personal Netware 5-user Kit	265
Personal Netware NE2000 coax 2-user Kit	149
Unixware Personal Edition - CD version	175
Unixware SDK v1.1 - CD version	75
Unixware NFS	135

SMC (Western Digital)

8003 Plus Elite 8 bit coax	99
8013 Plus Elite 16 coax / 6 pack	118/595
8013 Plus Elite 16 TP / 6 pack	119/599
8013 Plus Elite 16 Combo / 6 pack	139/775
8013 Plus/A for MCA / TP	*(175)/199
8 Port Concentrator (8TP + 1AUI)	349
12 Port Concentrator (12TP+2AUI+1BNC)	595
Elite Ultra 16 coax oem / reg	89/10
- 6 pack	*(489)53
Elite Ultra 16 TP oem / reg	88/10
- 6 pack	*(455)49
Elite Ultra 16 Combo oem / reg	99/11
- 6 pack	*(549)58
Elite Ultra 32 EISA Combo	21
Netware Boot ROM for Ethernet	3
Tiger HUB: 3206TA 6 Port	19

SYNOPTICS

Network products	ca

XIRCOM

PCMCIA CE-10B2 coax	*(23
PCMCIA CE-10BT TP	*(22
PCMCIA CE-10BC Combo	*(27
PE3-10B2 Pocket Adapter coax	*(255)28
PE3-10BT Pocket Adapter TP	*(259)28
PE-3 10BC Pocket Adapter Combo	*(295)32
PEM-10B2 w. Modem	*(39
PEM-10BT w. Modem	*(29

CABLES & ACCESSORIES

10BaseT, Level 3 plenum 1000'	16
Belden 8259, RG58 1000'	16
RG58 U 500' / 1000'	59/9
RG58 A/U 500' / 1000'	75/12
Twisted Pair 2-pair, PVC, Level 3	
- 500' / 1000'	45/5
Twisted Pair 4-pair, PVC, Level 3	
- 200' / 500' / 1000'	35/55/8
Twisted Pair 4-pair, PVC, Level 5	13

15. NOTEBOOK

TOSHIBA

T1960CS 486-DX2-50, 4MB RAM, 200MB HD, 1.44BM FD, Dual Scan Color	247
T1960CT 486-DX2-50, 4MB RAM, 200MB HD, 1.44MB FD, Active Color	309
T1960CT 486-DX2-50, 4MB RAM, 320MB HD, 1.44MB FD, Active Color	332
T3600CT 486-DX2-50 8MB RAM, 250MB HD, 1.44MB FD, Acitve Color	419
T4700CT 486-DX2-50, 8MB RAM, 200MB HD, 1.44MB FD, Active Color	489
T4700CT 486-DX2-50, 8MB RAM, 320MB HD, 1.44MB FD, Active Color	512

OTHERS

3600 Pentium 586-60 / 66, 16k cache, 8MB RAM 250MB HD, 1.44MB FD :	
- w. Active Color 60Mhz / 66Mhz	4075/427
- w. Dual Scan Color 60Mhz / 66Mhz	2995/319
- VLB Docking Station	47
9200 486-33, 128k cache, 4MB RAM, 200MB HD 1.44MB FD, Dual Battery :	
- w. Active Color	311
- w. Dual Scan Color	213
- w. Mono 64GS	165

16. POWER SUPPLY

AMERICAN POWER CONVERSION

APC-400 Smart-UPS (286, 386 WAS)	28
APC-600 Smart-UPS (386, 486 FS)	35
APC-900 Smart-UPS (386, 486, FS & WS)	51
APC-1250 Smart-UPS (multiple FS & WS)	63
APC-2000-2 2 Smart-UPS	115
APC-400 Back-UPS (300W)	17
APC-450 Back-UPS (325W)	20
APC-600 Back-UPS (425W)	28
APC-900 Back-UPS (650W)	37
APC PowerChute Plus :	
- for Novell	6
- for OS/2, Lan Server, 3 Com	7
- for Unix / Xenix	9
- for Windows NT	6
Power Doctor (DOS) I/F Kit for Smart-UPS	7
Surge Arrest Unit	ca

GENERAL

250W for Baby AT	4
250W for Baby or Mid Tower	4
250W for AT	4
250W for Full Tower	4
300W for Full Tower	6
550W for UPS	27
1200W for UPS	65

PC POWER COOLING

Standard 220	
- for Desktop	8
- for Full Tower	8
Silencer 270	
- for Slim (baby or mid tower)	13
- for AT Desktop	16
- for Full Tower	15
Turbo Cool 300	
- for Slim (baby or mid tower)	13
- for Desktop.	17
- for Full Tower	16

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*(price) .... special , while supplies last

Turbo Cool 450	
- for Desktop	325
- for Full Tower	315
Twinpower 900 (redundant)	925

TRIPP LITE

Isobar 4	*(29.95)
Isobar 6 w. Fax Modem Protection	*(45)
Isobar Console CC16 Plus w. RJ11	75
Isotel 4 w. RJ11	*(39.95)

17. PRINTER

BROTHER

HJ-400 Desktop Ink Jet for PC or Mac	265

CANON

BJ-200E Ink Jet	319
BJC-600 Ink Jet Par. 360dpi	599

CITIZEN

GSX-145 24 pin, 132 column	355
GSX-220 24 pin (w. free color kit)	185
GSX-230 Fonts & Quiet	219
GSX-240 Scalable Fonts & Quiet	285
Projet II Ink Jet / after rebate	279/249
Accessories :	
- Color Option for GSX-130	45
- Color Option for GSX-145	65

DEC (Digital Equipment)

Printers	call

HP (Hewlett Packard w. toner)

Desk Jet 520	289
Desk Jet 500C	375
Desk Jet 560C	569
Desk Jet 1200C PC, Mac	1379
Desk Jet 1200C Postscript PC, Mac	2049
Laser Jet 4+ / 4M+	1395/1899
Laser 4L / 4ML	639/985
Laser 4P / 4MP	939/1355
Laser Jet 4Si / 4SiMX	2875/4095
Accessories :	
- Duplex C2016A for 4Si or 4SiMX	495
- Envelope Power Feeder 75 Sheet (HP4)	279
- J2371A Jet Direct for 10BT	429
- J2372A Jet Direct Combo	465
- Legal, Letter or A4 250 Sheet Tray (HP4)	99
- Legal, Letter or A4 500 Sheet Tray (HP4)	109
- Lower Cassette w. Letter Tray (IIP, IIIP)	149
- Optional 500 Sheet legal Letter A4 (HP4)	279
- Postscript for 4	329
- Postscript C2013A for 4Si	575
- Toner for II, III	84
- Toner for IIP, IIP+, IIIP	76
- Toner for 4	99
- Toner for 4L or 4P	69
- Toner for 4Si	135

LASER MASTER

Win Printer 800 Postscript	1075
Win Printer XL600 11x17, 600x660ppi	2350
Winjet 1200 (postscript for HP4)	*(650)
Winjet 1200+ (postscript for HP4+)	*(675)775

MICROTEK

TrueLaser MTP-306 35 fonts, 6ppm, 2MB	*(795)

NEC

Super Script 610 Laser 6ppm, 300ppi	499

OKIDATA

ML184T 9 pin, Par	229
ML320 9 pin, Epson compatible	325
ML380 24 pin, Epson compatible	235
ML590 24-wire	429
OL410E Laser 4ppm, 600ppi	*(645)

PACIFIC DATA

ProTracer II Ink Jet (CAD Plotter) a4 to A2 size, 360dpi, I960RISC, 512k, 45dBA	1259
ProTracer II-GL2 w. HP-GL2 & 2MB	1669
Accessories :	
- HP-GAL Emulation Card	375
- Ink Cartridges	19.50
- Postscript Emulation Card	375
- Sheet Feeder I / II	135/115

PANASONIC

1150 9 pin, 55dBA	139
1624 24 pin	379
2023 24 pin, Quiet	185
2123 24 pin, 43.5dBA, Color capability	239
2124 24 pin, 43.5dBA, Color capability	319
3624 24 pin, 46.5dBA, Quiet	399
4410 Laser 5ppm, 512k	479
- Corona KX-PCR3	49
- Developer KX-PPD / KX-PDP5	110/125
- Drum KX-PDM4 / KX-PDM5	99/109
- Extra Cassette KX-PKC2	45
- Fonts Card KX-P47X	95
- Fuser Unit KX-PFS5	105
- Optional Second Cassette KX-P495	135
- Toner KX-P453	42
4420 Accessories	
- Developer KX-PDP2	95
- Drum KX-PDM2	99
- Envelope Tray KX-P431	59
- Legal Tray KX-P425	45
- Ozone Filter KX-PFT2	29
- Toner KX-P451	42
4430 Laser 5ppm, 1MB	665
- Accessories same as 4410	
4400 Led Page, ($50 Rebate + Free Toner)	499
- Apple Talk Interface KX-P412	179
- Drum Unit KX-PDM6	95
- Postscript Upgrade Board KX-PSU3	399
- Postscript Fax option KX-PFX1	259
- RS232 Serial Interface KX-P411	95
- Toner Kit KX-P445	17.50
4440 Laser 10ppm	995
4450 & 4450i & 4455 Accessories	
- Developer KX-PDP1	95
- Drum KX-PDM1	145
- Envelope Tray KX-P430	59
- Legal Tray KX-P420	45
- Ozone Filter KX-PFT1	32
- Toner KX-P450	42
4455 Postscript 11ppm	1695
5400 Led Postscript Page 4ppm ($100 Rebate + Free Toner)	799
- Accessories same as 4400	
Other Accessories :	
- 32k Buffer Dot Matrix KX-P43	65
- Auto Sheet Feeder for 1124 KX-P36	120
- Color Upgrade Kit KX-PCK11	55
- Serial Interface Card PS-13	75
- Single Bin Cut Sheet Feeder KX-PT10	95

QMS (Adobe Postscript)

PS410 4ppm, 2MB, 45 Fonts	925
- Envelope / Legal / Letter Tray	69/69/69
- Lower Cassette w. Letter Tray	149
- Toner	95

SEIKO

Smart Label Printer Plus	159
Smart Label Printer Pro	245
- Standard Label (2 rolls)	7.95

TEXAS INSTRUMENTS

Printers	call

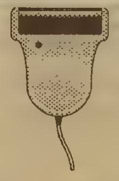
LASER PRINTER ACCESSORIES

PACIFIC DATA

25 in One! for HP DJ500	99
25 in One! for HP II, IID, IIP, IIP+, III, 4Si	245
Complete Font Library for HP III, IIID, IIIP	255
Font Bank for all HP Lasers (stores soft fonts) 0.75MB / 1.5MB	205/269
Pacific Connect XI :	
for HP II, IID, III, IIID -	
- 5 Port 256k / 1MB (4S 1P)	309/379
- 10 Port 256k / 1MB (10S)	449/519
for HP 4, IIISi, Paint Jet XL300 -	
- 7 Port 1MB / 4MB (6S 1P)	449/649
- 10 Port 1MB / 4MB (10S)	519/179
Pacific DirectNet for Novell	369
Pacific DirectNet for Novell & Unix	499
Pacific DirectNet for Novell & TCP/IP	599
Pacific 4, Postscript for HP 4	259
Pacific Page 2MB, Postscript for HP II	365
Pacific Page II/XL 4MB, Postscript for HP II	699
Pacific Page PE for HP IID,IIP,IIP+,III,IIID,IIIP	279
Pacific Page PE 2MB	385
Pacific Talk	179
Postscript 4MB PE/XL for HP III	699
Plotter in a Cartridge for HP II	225
Plotter in a Cartridge PE for HP IID, IIP, IIP+, III, IIID, IIIP	225

For other laser printer memory . . . . see sec.#9

18. SCANNER



ARTEC (hand)

ViewScan 256 w. OCR	85

AVISION (flatbed color)

Superior 24 bit, Color/ 256 Gray/ SCSI interface	
- AV600 / AV680 w. Lphoto Plus	509/649
- AV660 / AV680 w. Photoshop 2.5	725/845

HP (flatbed color)

ScanJet IICX Color w. Kit	935
- Auto Document Feeder	475
ScanJet IIP w. Kit (gray scale)	499

info™ PRODUCTS

INFO ImageReader scanner, the total full page scanning system that combines a complete selection of software with 24 bit color scanning.

The ImageReader SF6C provides 600 DPI resolution, 16.8 million colors, OCR, and Picture Publisher imaging. A TWAIN Compliant driver allows you to use the scanner directly from many applications. Also, the scan and fax capabilities provide the complete business and home office answer in one small package for DTP and multimedia input.

The Image Reader SF3GS provides 300 DPI resolution, 64 gray scale, OCR imaging. A TWAIN Compliant driver allows you to use the scanner from many applications. Included a iPhoto Plus image editing software can dither your direct scanning 64 gray scale pictures or photos into 256 gray scale graphics images.

SF3GS Gray Scale 300dpi w. OCR	265
SF6C Color 600dpi w. OCR	435

LOGITECH (hand)

Scanman Easy Touch w. OCR	179
Scanman 256	135
- w. Omni Page OCR	155
Scanman Color	255
- w. Omni Page OCR	285

MICROTEK (flatbed color)

Scan Maker II w. Photoshop L.E.	565
Scan Maker IIHR	1095
Scan Maker III	2495

MOUSE SYSTEM (hand)

Page Brush 256 w. OCR	85
Page Brush Color	215

TAMARACK (flatbed color)

ArtiScan 24 bit, Color / 256 Gray Levels / SCSI-interface / for PC or Mac	
- w. Pub. L.E. & OCR 600 / 800 / 1200 dpi	545/645/945
- w. Photostyler 600 / 800 / 1200 dpi	725/825/1095
- w. Photoshop 2.5 600 / 800 / 1200 dpi	725/825/1095
Slide Scan Kit (transparency, slide, X-ray) 600 / 800 / 1200 dpi	525/525/595

OTHERS

Fax Scanner (turn fax into scanner)	*(39)79
Omni Scan 256 for Win	*(259)

19. TAPE BACKUP

COLORADO

Backup for Win	39
DJ-20 250MB QIC-80 oem / reg	149/157
- 3M DC2120 Tape Cartridge	14.50
- AB-11 External Tape Port	35
- Cable (2FD & tape backup)	6
- FC-20 Controller	69
- KE-09 External Kit w/o Controller	59
- TC-15 Controller w. Data Compression	155
- Unix / Xenix Driver	99
PT-10 PowerTape 1GB SCSI Int	599
PT-25 PowerTape 2GB 300Kb/s Int	965
PTE-25 PowerTape 2GB Ext	1095
PT-50 PowerTape 4GB 300Kb/s Int	1525
PTE-50 PowerTape 4GB Ext	1655
Tracker 120MB (printer port)	285
Tracker 250MB (printer port)	319

CONNER

CNR-C250MQPT 250MB Ext	315
CNR-2150S 250MB Int	325
CNR-2525S 525MB Int	469
CNR-4320RT 2GB Int	745
CNR-4350XT 2GB Ext	985
CNR-4324RP 4GB Int	849
CNR-4354XP 4GB Ext	1145
Tape Stor 250MB w. 3M Cartridge	145

EXABYTE

EXB-2501 750MB - 1.5GB SCSI-2 Int	515
EXB-2501 750MB - 1.5GB SCSI-2 Ext	685
EXB-4200 4mm Dat. 2GB Int	845
EXB-4200 4mm Dat. 2GB Ext	995
EXB-8205 8mm Dat. 2.5 - 5GB Int	1375
EXB-8205 8mm Dat. 2.5 - 5GB Ext	1645
EXB-8505 8mm Dat. 5 - 10GB Int	2085
EXB-8505 8mm Dat. 5 - 10GB Ext	2350
FS1G w. Control Kit (2501 drive, Adaptec 1522, cables, cartridge, s/w) Int / Ext	699/899

HEWLETT PACKARD

35480 4mm Dat . 8GB SCSI Int	1069

IOMEGA

250MB Insider 3.5" w. 5.25" frame	185

20. VGA CARD

(All cards 1024 x 768 except stated)

ATI

Graphics Ultra Plus 2 DRAM w. mouse	199
Graphics Ultra Pro 2 ISA w. mouse	279
Graphics Ultra Pro 2 VRAM VLB	265
Graphics Ultra Pro 2 EISA	325
Graphics Ultra Pro 2 PCI	315
Graphics Pro Turbo 2MB PCI / VLB	379/379
Graphics Pro Turbo 4MB PCI / VLB	589/589
Graphics Wonder 1MB ISA	135
Graphics Wonder 1MB VLB	139

CARDEX

Cirrus Logic Cl5428 1MB	99
Cirrus Logic Cl5428 2MB	145
Cirrus Logic GD5434 64 bit 1MB PCI / VLB	135
Cirrus Logic GD5434 64 bit 2MB PCI / VLB	179
ET4000 Tseng Lab 1MB ISA	79
ET4000 Tseng Lab 1MB VLB	109
ET4000 W32i VLB 1MB	129
ET4000 W32i VLB 2MB	179
ET4000 W32p 2MB PCI	199
S3 Vision 864 64 bit 2MB PCI	199

DIAMOND

Stealth 32 2MB PCI / VLB	199/199
Stealth 64 2MB PCI / VLB	339/339
Stealth 64 4MB PCI / VLB	469/469
Stealth Pro VRAM 1MB ISA	225
Stealth Pro VRAM 1MB VLB	235
Stealth Pro VRAM 2MB ISA	309
Stealth Pro VRAM 2MB VLB oem / reg	289/315
Viper P9000 VRAM 2MB VLB	349
Viper SE VRAM 2MB PCI oem / reg	299/379

MATROX

IMP/3AH 1600 x 1200, 3MB ISA	699
IMP/3VH 1600 x 1200, 3MB VLB	699
VLB/2 1280 x 1024, 2MB VLB	425
VLB/2 Plus 1600 x 1200, 2MB VLB	465
PCI/2 1600 x 1200, 2MB PCI	399
PCI/2 Plus 1600 x 1200, 2MB PCI	429
PRO/4.5ZV 1600 x 1200, 8MB VLB	1359
Upgrade/2 2MB Memory	215

MEDIA VISION

ProGraphics 1024 VL 256 Color 1MB	*(199)239
ProGraphics 1024 VL 16m Color 2MB.	*(285)339
ProGraphics 1280 4MB	675

METHEUS

Premier 928 VRAM 4MB	765
Premier 928VL VRAM 2MB VLB	599
- 1MB VRAM Memory upgrade	129

NUMBER NINE

T134020, 1280 x 1024, 90Hz, S3-928 chip	
- GXe Level 10 VRAM 1MB ISA	259
- GXe Level 11 VRAM 2MB ISA	335
- GXe Level 11 VRAM 2MB VLB	339
- GXe Level 12 VRAM 3MB ISA	395
- GXe Level 12 VRAM 3MB VLB	405
- GXe Level 14 VRAM 4MB ISA	599
- GXe Level 14 VRAM 4MB VLB	599
- GXI-TC L29 72Hz, VRAM 4MB, DRAM 1MB	1385
GXe-64 DRAM 1MB PCI / VLB	195/195
GXe-64 DRAM 2MB PCI / VLB	259/259
GXe-64 Pro VRAM 2MB PCI / VLB	349/349
GXe-64 Pro VRAM 4MB PCI / VLB	529/529

ORCHID

Fahrenheit 1280+ DRAM 1MB ISA	135
Kelvin 64 Windows Accelerator 1MB PCI	155
Kelvin 64 Windows Accelerator 1MB VLB	155
Kelvin 64 Windows Accelerator 2MB PCI	199
Kelvin 64 Windows Accelerator 2MB VLB	199

OTHERS

CGA / MGP Card (monographic w. printer port)	29
Intel Smart Video Recorder	*(369)
Oak087 Super VGA 512k	52
Oak087 Super VGA 1MB	65
Paradise Window Accel 24 bit	129
Video Plus (video image grabber)	195
V-Mate Pro (flicker free ext. video encorder)	199
WinVision (video capture)	165

*(price) . . . . special , while supplies last

SOFTWARE

1. CD SOFTWARE

Call for Wholesale Prices

$5.99 Each

- 3D Dinosaur Sampler
- Clip Media 2.0
- Club Kid Soft
- Lazer Tax (480 tax forms)
- Mayo Clinic: Sampler
- Selectware
- Shareware Collection
- Super Game I

$6.99 Each

- Game Arena
- Jokes and Pranks
- Sneak Peaks
- Super Game II
- Ultimate Collection
- VGA Spectrum
- Wave Pool

$7.99 Each

- Business Assistant
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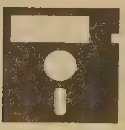

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- upgrade	
Harvard Graphics 3.06 Dos	*(32
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- v2.0 for Win	
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Win Comm Pro	*(7
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Winfax Pro 4.0	
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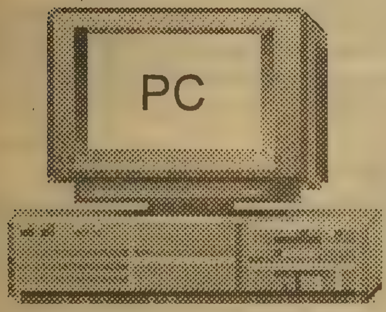

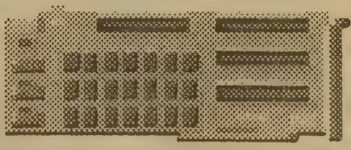

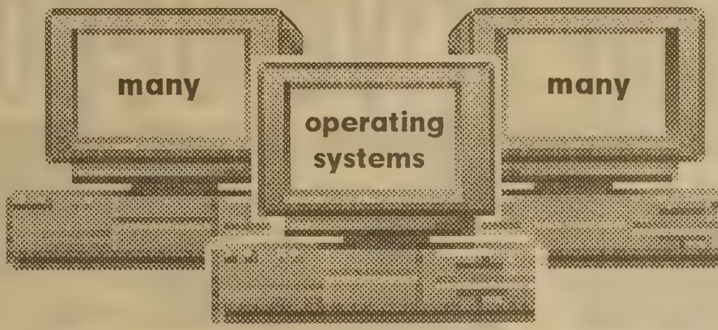

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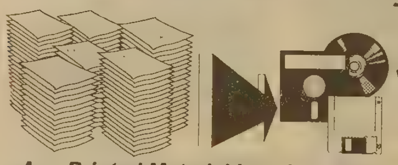

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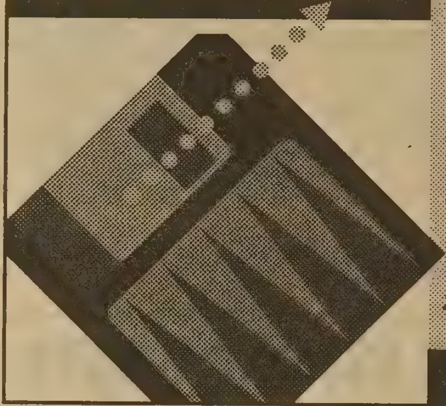

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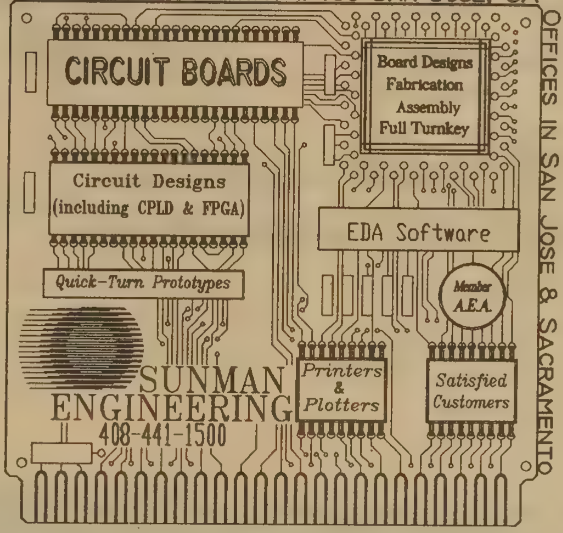

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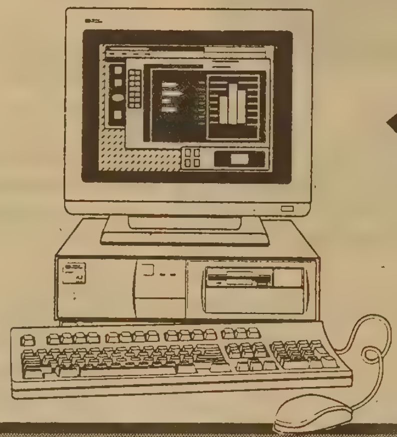

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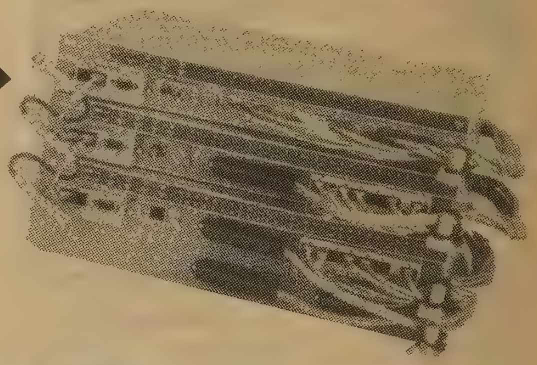

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CENSORSHIP

continued from page 128

Community Standards And Amateur Action: Not As Simple As It Seems

By Paul Hoffman

The prosecution of the Amateur Action BBS in a jurisdiction halfway across the country from its Milpitas headquarters brings up many interesting legal questions. However, the online community may have been too quick to make the sysops, Robert and Carleen Thomas, the poster children for the First Amendment.

The Thomases' lawyer, Richard Williams of San Jose, is widely quoted as saying, "This case would have never gone to trial in California," hoping to differentiate the entire state from the backwoods image that many people have of Tennessee. This is itself open to question—not all of California is particularly liberal (we do have a conservative Republican governor, after all), and it's not clear that even the most liberal parts of California wouldn't find some of the material on Amateur Action to be obscene. Although Milpitas isn't in the middle of Orange County, it's not in the middle of the Tenderloin in San Francisco, either.

While the BBS has many other pictures that might or might not pass the obscenity test in various locations of the Bay Area, two types of pictures on Amateur Action could easily be considered obscene and result in a conviction in almost any community in California: sex with animals and sexualization of young children.

The BBS offers hundreds of pictures of women having sex with dogs, horses, donkeys, and other animals. There are also dozens of shots of men having sex with cows. Possible animal rights issues aside, using animals for sexual gratification could certainly be considered obscene by many.

Sexualizing children is a much deeper issue to many people, and is generally a "hot button" for people of all political persuasions. The Thomases are careful to never use the word "child" in any of their picture descriptions. Instead, they use words like "schoolgirl," "lolita," and "pre-teen." Hundreds of the photos on the BBS have captions indicating that they depict sex with children. Hundreds of photos interspersed with these are of nude children, not having sex.

When you download and look at the photos labeled as depicting child sex, you realize that the models are probably not children, but adults. Despite their pedophilic descriptions, this fact may keep the pictures themselves outside the legal definition of child pornography and obscenity. However, the board's practice of grouping pictures of actual nude children (probably from family nudist camps) in the same category as the pictures that supposedly portray adults having sex with children arguably sexualizes the children in the nudist photos in a way that the children, and their parents, would probably not consent to.

Outside the context of Amateur Action BBS, the nudist photos with the children are almost certainly not obscene. Offered in the same context with photos whose captions clearly indicate sex with children, however, the child photos become sexualized.

The photos of nude children are quite popular on Amateur Action. For example, the Thomases posted a photo of a nude family (Father, mother, two girls probably between 3 and 8 years old) a week after their conviction, and it was downloaded over 150 times in the first four days. Of course, the Thomases didn't use the word child; instead, the caption reads "Family nudism! Mom, dad, and 2 junior teens!" while the girls in the picture are very clearly under 10, one of them under 5.

Basically, the argument that Amateur Action BBS does not have any material that could be considered obscene in California isn't true. There are many possible reasons why the Thomases weren't prosecuted in the same fashion here, but to say that the Thomases would have only been convicted in conservative Tennessee completely overlooks the content and context of the particular BBS in question. ■

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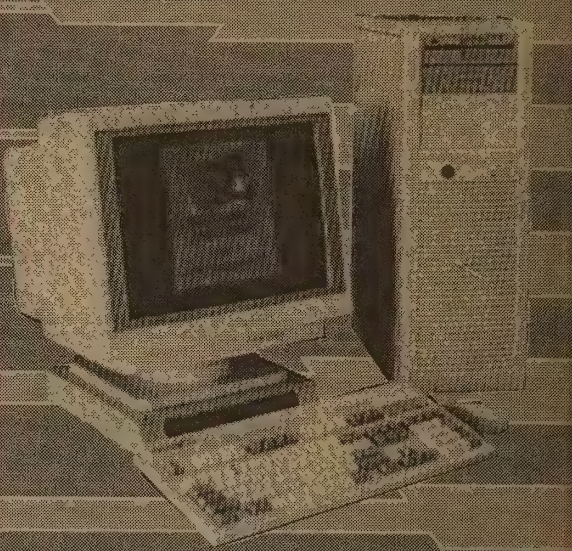

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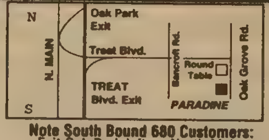

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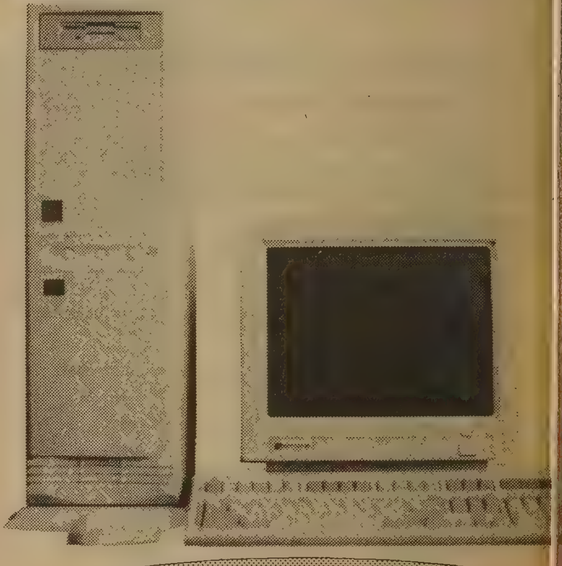

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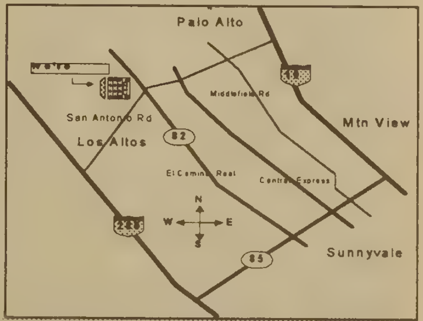

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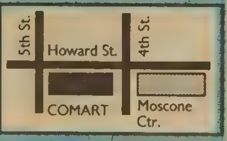

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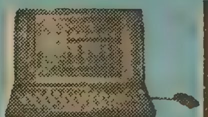

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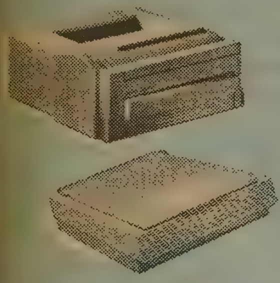

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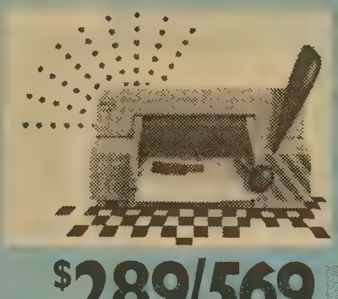

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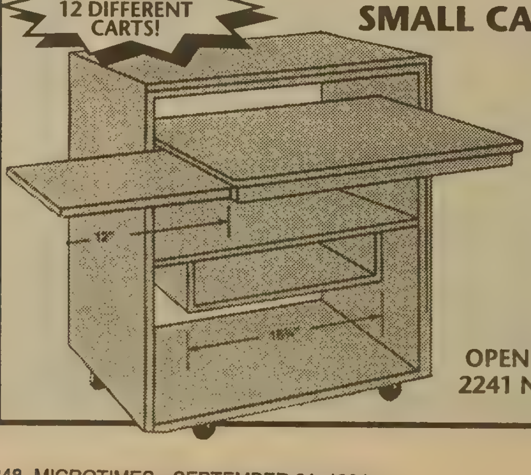

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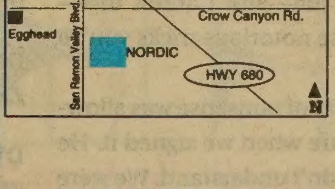

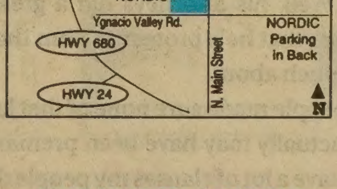

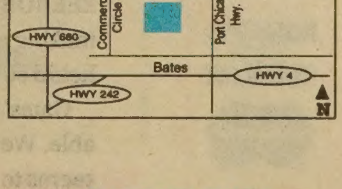

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A trip to the archives:
This article orginally appeared in MicroTimes, May 11, 1992 Issue # 95

Bill Gates And No Sympathy For The Devil

Or An Interview With Mr. B. L. Zeebub— Astonishing True Story

BY JOHN C. DVORAK

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On April 15, 1992, I was granted an exclusive interview with the master of darkness, Mr. B. L. Zeebub, head honcho of the underworld, sometimes known as "Satan" or "the devil." Since I avoid association with his clan, he contacted me by MCI Mail to set up a meeting. He had learned that I was looking into various industry moguls who are believed to have made a deal with the devil, and that I had become something of an expert on the subject.

Because of an unusual deal he made with Bill Gates, Mr. Zeebub thought it would be good to have a meeting. We chose a neutral spot, the lobby of the San Francisco Marriott, to meet. The conversation was taped, and the following is an edited transcript.

DVORAK: So exactly why did you call for this meeting? I find this unusual.

ZEEBUB: It's quite out of the ordinary for me, too, but I have done quite a few deals with many of the richest men in high technology, and I want to go public with the information.

DVORAK'S LAST COLUMN

DVORAK: Why? What difference does it make?

ZEEBUB: Not wanting to name names, I did a deal with Bill Gates, and it's causing some confusion and consternation with some of the other fellows.

DVORAK: Bill Gates? Don't tell me he sold his soul to become a billionaire?

ZEEBUB: Well, that's what we thought at first.

The deal was pretty straightforward. He's one of the richest men in the world and can have anything he wants. This is, of course, thanks to me. After he's dead I'm supposed to have certain rights that supersede normal procedure. Now we've discovered that this will never happen.

DVORAK: So he sold his soul to be rich?

ZEEBUB: It's not that simple. Gates is too smart for that kind of a deal. He's a tough negotiator. I think the contract is a bit unusual.

DVORAK: For example?

ZEEBUB: Well, his attorneys did a great job—and I admit this—making sure that he's protected from those notorious tricks you've heard so much about.

Gates' people made sure none of that kind of nonsense was allowable. We actually may have been premature when we signed it. He seems to have a lot of clauses my people didn't understand. We were so concerned with his soul that we didn't pay enough attention to his attorneys. The guy just doesn't look that threatening.

DVORAK: Uh, let me get this straight. You did a deal with Gates and the deal favored him?

ZEEBUB: Well, it actually may be worse than that. I'm not sure wha to do about it.

Gates' deal has some interesting performance clauses and som fallback language that they slipped by us. Gates requires that his ne worth increase $10 billion by the end of 1992 and then double eac year for the next five years. It was written in such a way that we didn' see how the numbers were going to increase so fast.

My people are having a hell of a time, pardon my French, maintaining his wealth curve. We got him up to eight billion or so and ca probably meet this year's requirements, but to double it again is goin to be tough.

DVORAK: So throw in the towel. What's the big deal?

ZEEBUB: It turns out that if we don't perform, Gates gets my business

DVORAK: What do you mean, "gets your business?"

ZEEBUB: Takes over the business. You know, like, owns it.

He gets all those contracts from me. Can you imagine what wil happen when those guys who signed up with me from Su Microsystems, for example, find out that Gates gets their souls!?!?

DVORAK: You mean he'd get their souls? Like for eternity? That kin of thing? What would he do with them? What about when he grows ol and...

ZEEBUB: Oh, he's already immortal. That was another deal he di with an associate long ago. Bill Gates is 208 years old! If I had know about it I wouldn't have done this deal in the first place.

Anyway, I have no idea what he'd do with their souls. Auction them I suppose. It's not them I'm worried about.

DVORAK: Who *are* you worried about?

ZEEBUB: Me. My counselors *now* tell me that if I go into default h will actually own *my* soul.

DVORAK: Wow. First the business, then the soul. How could such thing happen? What would it mean to the scheme of things?

ZEEBUB: That's what we're trying to figure out. My long-term obligations to the universe and the good-evil continuum are in jeopardy There's a rumor going around that Gates wants to parcel hell, put i a fake beach and sell condos. It's not that I care that much about th property. It's the principle of the thing.

DVORAK: So what's the point of this meeting?

ZEEBUB: Do you know any good lawyers?

DVORAK: I thought you had them all in hell.

ZEEBUB: They don't keep up with current cases.

Shortly thereafter I left Mr. Zeebub in the Marriott lobby. He looke depressed. I agreed to publish this interview as a plea for an attorney fo the devil. I'm told the attorneys know how to get in touch with him.

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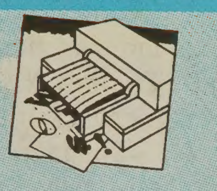

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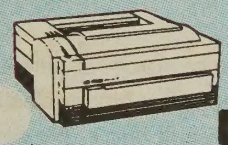

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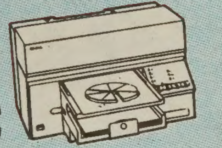

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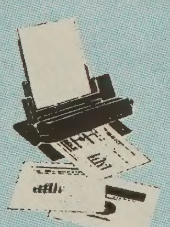

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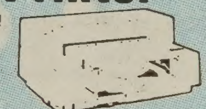

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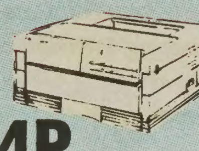

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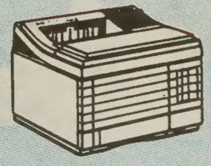

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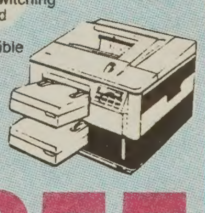

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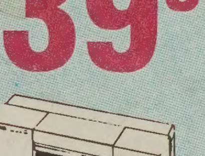

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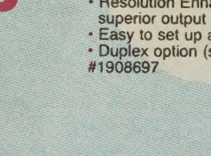

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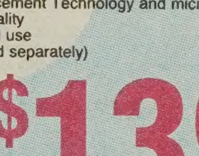

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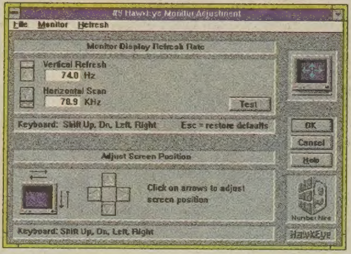


#9 HawkEye Monitor Adjustment

Monitor Display Refresh Rate

Vertical Refresh 74.0 Hz

Horizontal Scan 78.9 KHz

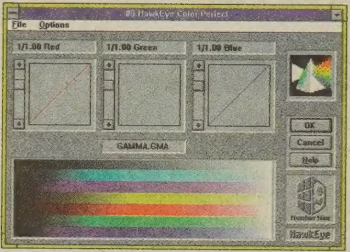
Keyboard: Shift Up, Dn, Left, Right   Esc = restore defaults

Adjust Screen Position

Click on arrows to adjust screen position

Keyboard: Shift Up, Dn, Left, Right

Monitor Adjustment: Fine tune your screen refresh to the peak performance of your monitor with easy push-button controls.



#9 HawkEye Color Perfect

1/1.00 Red   1/1.00 Green   1/1.00 Blue

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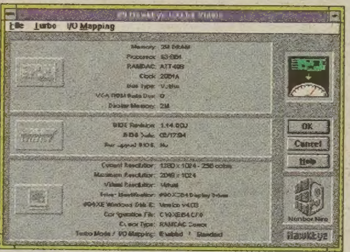
Color Calibration: Match screen tones to Pantones® or any other check-standard for color accurate pre-press results. (GXE64*Pro* only)



Memory: 2M DRAM

Processor: S3-864

RAMDAC: ATT 498

Clock: 20814

BIOS Revision: 1.14.60J

BIOS Date: 02/17/94

Current Resolution: 1280 x 1024 - 256 colors

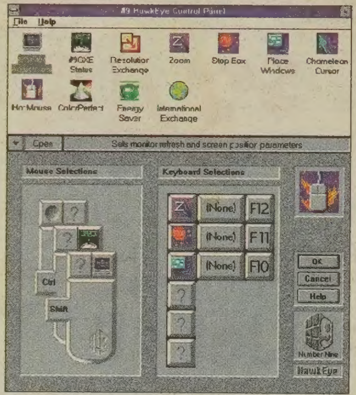
Maximum Resolution: 2048 x 1024

Virtual Resolution: Virtual

Configuration File: C:\9GXE64.CFG

Turbo Mode / I/O Mapping: Enabled / Standard

Instant Status: Hardware and software configuration data is immediately available to quickly pinpoint system state-of-health.

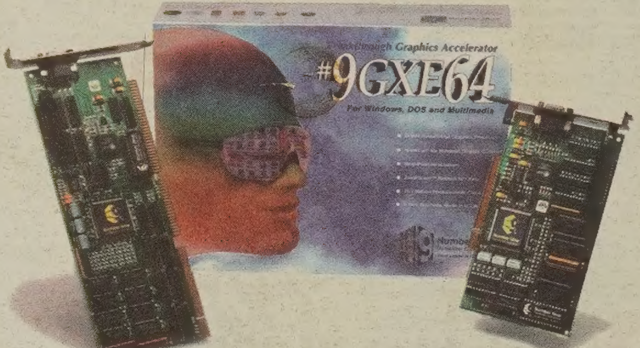


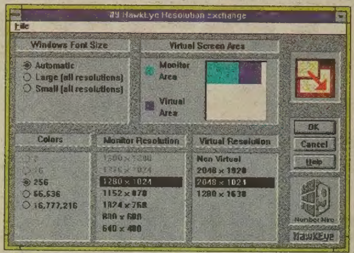
#9 HawkEye Control Panel

Sets monitor refresh and screen position parameters

Keyboard Selections: (None) F12, (None) F11, (None) F10

Hot Mouse: Instantly activate frequently used HawkEye for Windows applets by assigning them to mouse or keyboard hot keys.





#9 HawkEye Resolution Exchange

Windows Font Size: ● Automatic ○ Large (all resolutions) ○ Small (all resolutions)

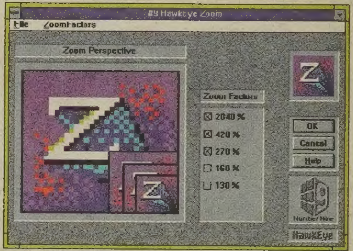
Virtual Screen Area: Monitor Area, Virtual Area

Colors: ● 256 ○ 65,536 ○ 16,777,216

Monitor Resolution: 1600 x 1200, 1280 x 1024 (selected), 1152 x 870, 1024 x 768, 800 x 600, 640 x 480

Virtual Resolution: Non Virtual, 2048 x 1920, 2048 x 1024 (selected), 1280 x 1638

Resolution Exchange: An all-in-one resolution control center to easily select color depth, screen resolution and virtual desktop size.

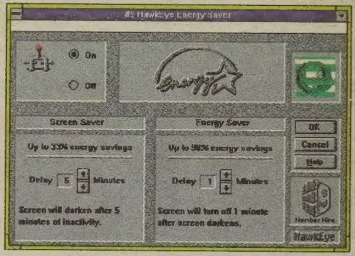


#9 HawkEye Zoom

Zoom Perspective

Zoom Factors: ☒ 2040 % ☒ 420 % ☒ 270 % ☐ 160 % ☐ 130 %

Hardware Zoom: For close-up views, instantly magnify your screen up to five times normal size. Panning brings every pixel into view.



#9 HawkEye Energy Saver

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